

NEW SPECIES OF *CHIMARRA* SUBGENUS *CHIMARRA* STEPHENS FROM
COSTA RICA (TRICHOPTERA: PHILOPOTAMIDAE)

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Abstract.—Fourteen species of *Chimarra* subgenus *Chimarra* from Costa Rica, Panama, and Ecuador are described: *C. amica* n. sp. (Costa Rica), *C. colmillo* n. sp. (Costa Rica), *C. guanacasteca* n. sp. (Costa Rica), *C. janzeni* n. sp. (Costa Rica), *C. jemima* n. sp. (Costa Rica), *C. lata* n. sp. (Costa Rica), *C. longiterga* n. sp. (Costa Rica, Panama, Ecuador), *C. munoz* n. sp. (Costa Rica), *C. paraortiziana* n. sp. (Costa Rica), *C. peineta* n. sp. (Costa Rica, Panama), *C. pollex* n. sp. (Costa Rica, Panama), *C. solisi* n. sp. (Costa Rica), *C. virgencita* n. sp. (Costa Rica), and *C. yanura* n. sp. (Costa Rica). In addition, *C. angustipennis* Banks and *C. dentosa* Ross are documented from Costa Rica for the first time.

Key Words: Philopotamidae, *Chimarra*, new species, Neotropics

Chimarra Stephens is a very large, cosmopolitan genus found on all continents (except Antarctica) and also on many islands in the Pacific. It constitutes the largest genus in the family Philopotamidae. The number of described species in the genus is about 340, over half described in just the past 30 years (Fig. 1). Many additional species await discovery and description. Chantaramongkol and Malicky (1989) estimate that there may be over 500 species in Asia alone. One hundred sixteen species have been described to date from the New World. While the diversity in the New World may not equal that of Asia, there are undoubtedly many additional undescribed species. Largely through the efforts of Dr. O. S. Flint, Jr., Dr. J. Bueno-Soria, Dr. L. Botosaneanu, and others, the number of described species in the New World has doubled in just the last 25 years. In this paper fourteen additional species of *Chimarra* are described, all of which have distributions including or confined to Costa Rica. This paper represents the results of an ongoing project, spon-

sored by the NSF, to discover and describe the caddisfly fauna of Costa Rica. Work has been coordinated under the Instituto Nacional de Biodiversidad (INBio) of Costa Rica, whose goal is to completely document the biodiversity of the country within the next decade.

Compared to North America, Central America is an important center of diversity for the genus *Chimarra* in the New World. In North America north of Mexico, 22 species are recorded in the genus *Chimarra*, all but one in the subgenus *Chimarra*, and the other in the subgenus *Curgia* Walker. This probably constitutes a relatively complete record of the genus for this area. In Costa Rica, by comparison, we have collected specimens of 39 species of *Chimarra*, 26 of them in *Chimarra*, and the remainder in *Curgia*. Fourteen new species in the subgenus *Chimarra* are described in this paper. While it is uncommon for more than two or three species of *Chimarra* to co-occur at one site in North America north of Mexico, in Costa Rica it is common to find six spe-

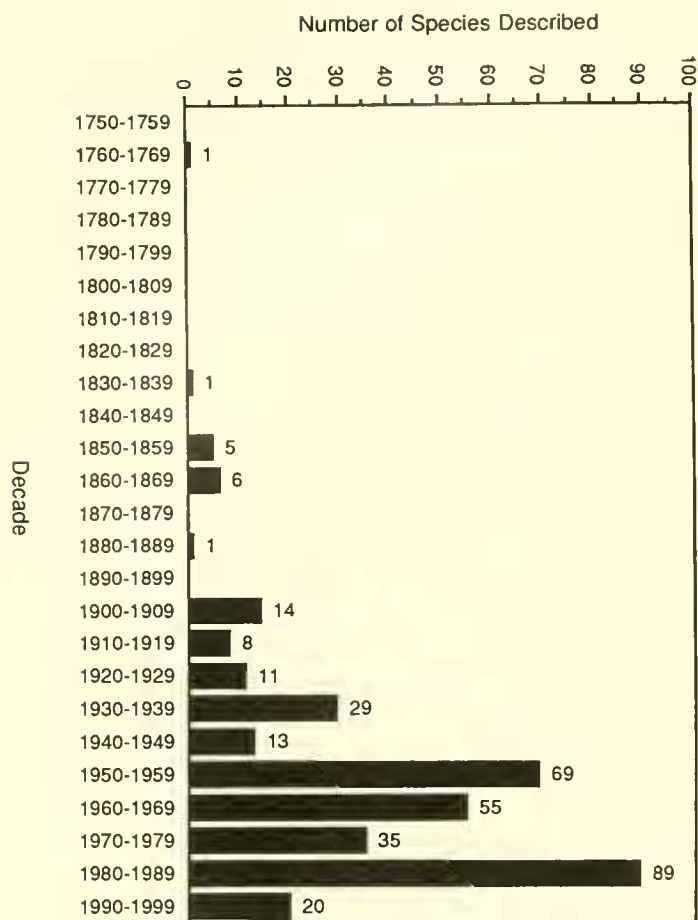


Fig. 1. Number of *Chimarra* species described per decade, based on species currently recognized as valid.

cies of *Chimarra* (*Chimarra*) occurring at one site, and occasionally an equal number of species of *Chimarra* (*Curgia*). From one extraordinary site in Parque Nacional Guanacaste, the Río Orosí at Estación Pítila (at which site the river is only a small trickling stream), sixteen species of *Chimarra* (*Chimarra*) and three species of *Chimarra* (*Curgia*) were collected between the 22nd and 25th of May in 1990.

Described species of *Chimarra* (*Chimarra*) previously reported from Costa Rica include *C. alata* Bueno, *C. bicolor* (Banks), *C. duckworthi* Flint, *C. elia* Ross, *C. emima* Ross, *C. flinti* Bueno, *C. ortiziana* Flint (probably actually *C. paraortiziana* n. sp. or *C. peineta* n. sp.), *C. picea* (Navás) (described from a female and possibly the same as some other named species), *C. ridleyi* (Denning), *C. rossi* Bueno, *C. spangleri* Bueno, and *C. villalobosi* Bueno. In addition, we report here for the first time collection records of *C. angustipennis* (Banks) and *C. dentosa* Ross. Sources for original

descriptions and literature records of species previously recorded from Costa Rica are given by Holzenthal (1988). Sources of original descriptions and additional literature citations for *C. angustipennis* and *C. dentosa* can be found in Bueno-Soria and Flint (1978). Species described in this paper are assigned membership in various species groups under the species descriptions and the approximate membership of those groups is defined. However, these assignments are tentative. A revision and character analysis of Neotropical species of *Chimarra* (*Chimarra*) is in progress by the first author.

Species determinations were made by examination of male genitalia. Male genitalia were cleared in cold 10% KOH overnight and a syringe was used to empty the macerated contents from the abdomen. When possible, males in which the phallus was fortuitously expanded were selected for clearing to reveal details of the phallic morphology. Terminology for male genitalia follows that of Schmid (1980), except that the term lateral lobe of tergum X is used instead of intermediate appendage. The term phallotremal sclerite complex is used to refer to all of the sclerotized structures at the tip of the phallus, due to uncertainty about homology of the structures to those in other groups of Trichoptera. Among the species described in this paper, the phallotremal sclerite complex is consistently composed of a ringlike structure (sometimes with a dorsal sclerous projection), attached to a ventral sclerous strip, or "rod." Surrounding the apicoventral portion of the rod is a membranous structure, often with distinctly sclerotized anterior or dorsolateral edges. This membranous apical structure may not be obvious in many specimens, even though the accompanying sclerites are. Also, the exact structure of the rod and ring apparatus may not be clearly apparent in all of the illustrations, depending on the view illustrated; however, its relatively constant morphology should be kept in mind. Several views of the inferior appendages are includ-

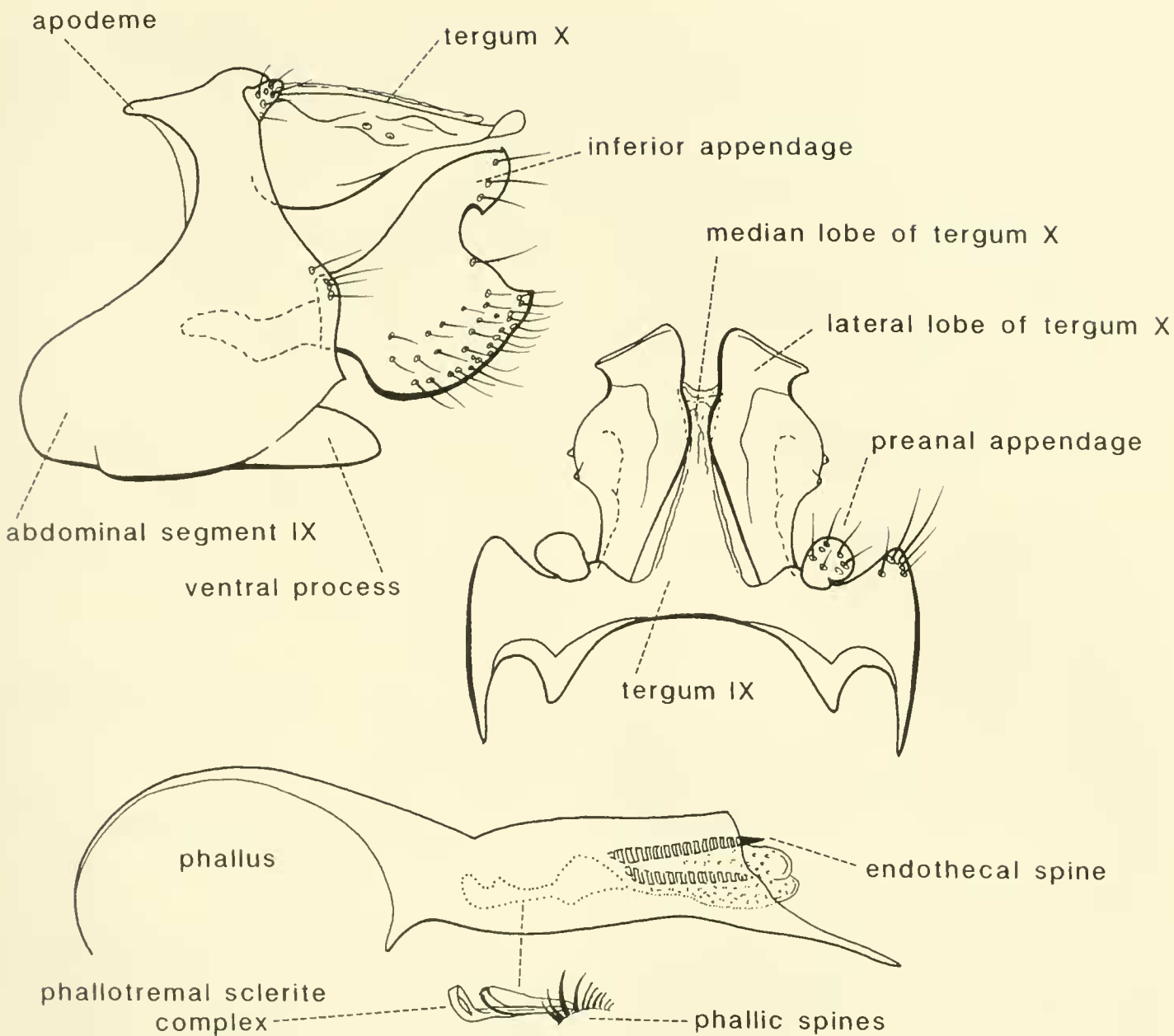


Fig. 2. Terminology for male genitalia of *Chimarra*.

ed in the illustrations because of the usefulness of this character in making species determinations, and because of the difficulty of gaining a dimensional perspective of the appendages from a single view. Views generally illustrated are lateral, dorsal, ventral or caudal, and oblique lateral. The oblique lateral view is provided to give an overall dimensional perspective of the pair of inferior appendages, but its orientation is not constant for all of the species; in general the view is oriented caudally and somewhat ventrolaterally. Genitalic structures are illustrated and labelled in Fig. 2. Forewing measurements are given to the nearest 0.1 mm and generally for males only. Females usually are about 0.5 mm longer. However,

great variability in size occurs within species and the measurements only reflect the variability in the specimens at hand.

Because of the close morphological similarity between species and the frequent co-occurrence of numerous species at a single site, it has not yet proven possible to confidently associate females with males. They have accordingly been omitted from the following descriptions. Differences in genitalia, however, do exist and it should prove possible to distinguish at least some of the species in the future when accurate associations have been made.

Holotypes are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D. C. (NMNH).

Paratypes are deposited in the University of Minnesota Insect Collection, St. Paul, Minnesota (UMSP), the National Museum of Natural History (NMNH), the Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica (INBIO), and the University of California, Riverside, California (UCR), as indicated in the species descriptions. Unless otherwise stated, all material is represented by pinned specimens.

Chimarra amica Blahnik and Holzenthal,
NEW SPECIES
Fig. 3A–F

This species is apparently related to *C. longiterga* n. sp. It shares with that species elongate endothelial spines and a phallus possessing a spinelike process with a basal sclerous curl (although in this species the spinelike process is short and curved rather than elongate). It can be distinguished from *C. longiterga* n. sp., and all other species of *Chimarra*, by the shape of the inferior appendages.

Male: Forewing length 4.3–5.0 mm. Color rather uniformly fuscous, except femora yellowish. Genitalia: Abdominal segment IX with pair of well-developed anterodorsal apodemes; anteroventral margin sinuously elongate; posteroventral process elongate narrow, apex subacute. Tergum X membranous mesally, with pair of sclerotized lateral lobes, rounded at apex, each bearing pair of sensilla on distinct, rounded projection near base. Preanal appendages short, globose. Inferior appendage, in lateral view, with acute apex, approximately forming right angle to posteriorly oriented, dorsal, thumblike process; thumblike process curved proximally (in caudal view); proximal surface of inferior appendage with conspicuous raised ridge and raised setae near base. Phallus with acute apicoventral extension of phallobase; endothelial spines two, slender, elongate, posteriormost distinctly curved and slightly helically rotate; phallus tip (apparently) with minute echinate spines

and short, curved, spinelike structure attached to sclerous curl; phallosomal sclerite complex composed of rod and ring structure and apical membranous structure with associated wishbonelike sclerites.

Holotype: ♂, Costa Rica: Guanacaste: Parque Nacional Guanacaste, Estación Maritza, Río Tempisque, 10.958°N, 85.497°W, el 550 m, 30–31.viii.1990, Huisman, Blahnik, Quesada (NMNH). *Paratypes:* Costa Rica: Guanacaste: 6 ♂, P. N. (Parque Nacional) Guanacaste, Estación Pitilla, Río Orosí, 10.991°N, 85.428°W, el 700 m, 22–25.v.1990, Holzenthal & Blahnik (UMSP); Heredia: 1 ♂, Estación Biológica La Selva, Quebrada Sura, 10.437°N, 84.010°W, el 50 m, 20–21.vi.1986, Holzenthal, Heyn, Armitage (INBIO).

Etymology: Amica, from the Latin *amicus*, for friendly, in reference to an imagined resemblance of the inferior appendage to an outreached hand.

Chimarra colmillo Blahnik and Holzenthal,
NEW SPECIES
Fig. 4A–F

This species is apparently related to *C. ortiziana* Flint, and together with *C. gondela* Flint, *C. platyrhina* Flint, *C. dolabrifera* Flint, *C. villalobosi* Bueno, and other new species described in this paper, including *C. paraortiziana* n. sp., *C. peineta* n. sp., *C. pollex* n. sp., and *C. solisi* n. sp., form what can be called the Ortiziana Group of *Chimarra*. This species can be separated from other members of the Ortiziana Group by the shape of the inferior appendages and the characteristic structure of the lateral lobes of the tenth tergum. The latter structures, in this species, are truncately rounded apically of the lateral sensilla-bearing projections. The two slender, spinelike structures of the phallus (which may appear as a single spine because they are closely apposed) are also unique.

Male: Forewing length 4.4–5.7 mm. Color rather uniformly fuscous black, except femora yellowish-brown (especially in prox-

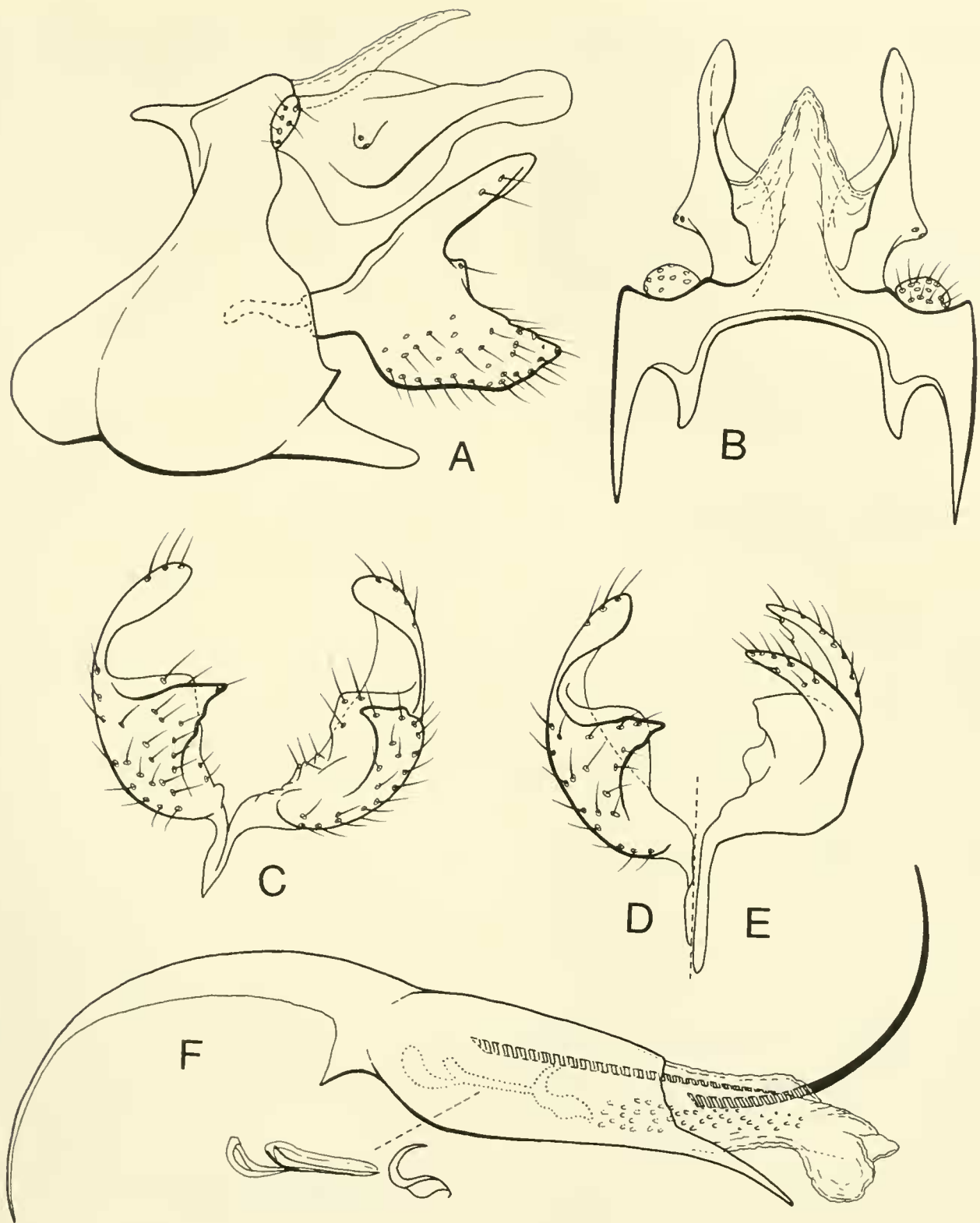


Fig. 3. A–F. *Chimarra amica* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: phallotremal sclerite complex, and sclerous curl and spine).

imal portion). Genitalia: Abdominal segment IX, in lateral view, with very pronounced sinuate extension of the anteroventral margin, and small apodemes from the anterodorsal margin; posteroventral process moderately elongate, subacute

apically. Tergum X membranous mesally, with sclerotized lateral lobes, each bearing pair of sensilla on nipplelike projections on the outer margin. Lateral lobe of tergum X truncate, rounded apically, the apical margin continuous with caudal-most nipplelike

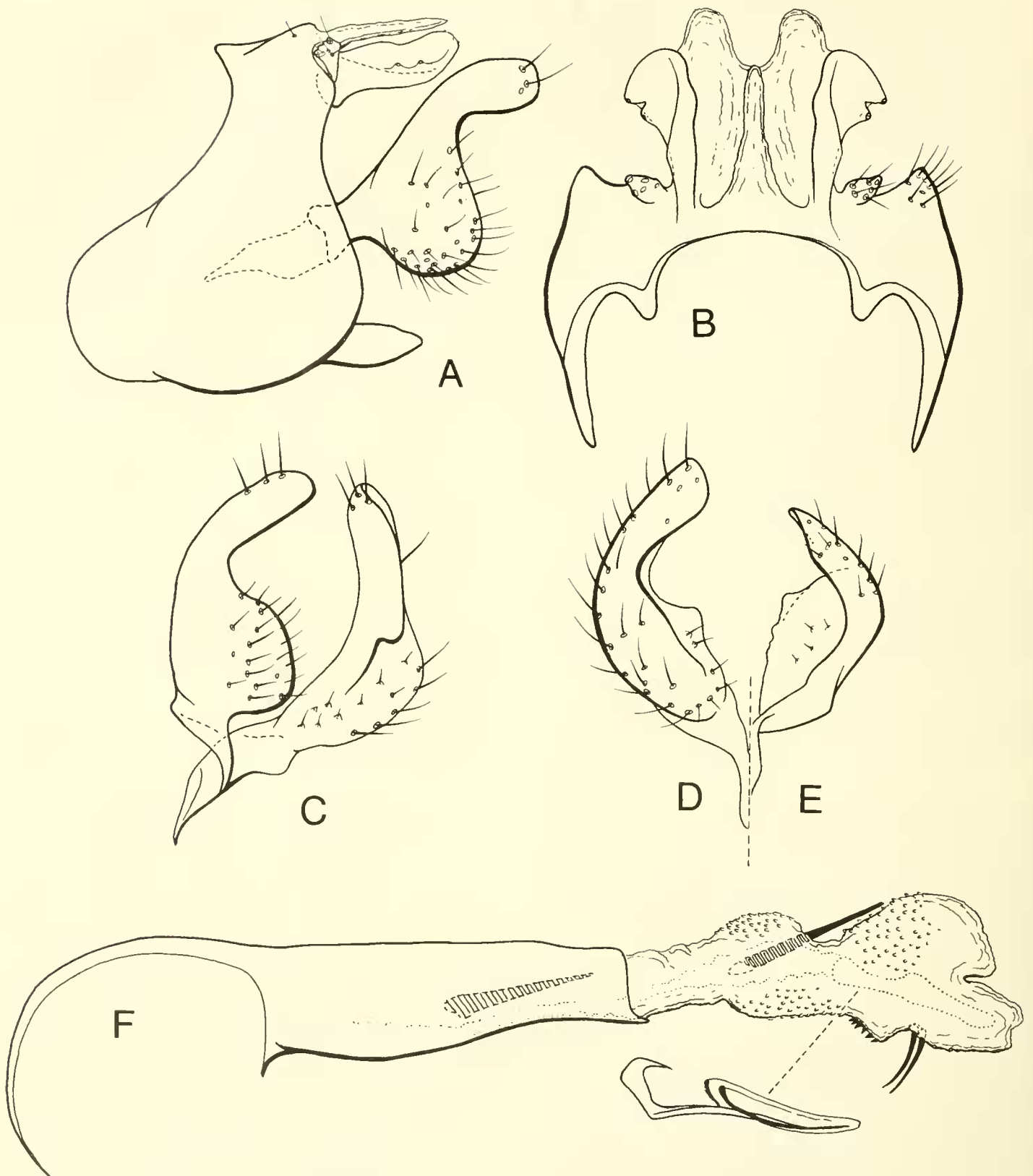


Fig. 4. A-F. *Chimarra colmillo* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: enlargement of phallotremal sclerite complex).

projection. Inferior appendage, in lateral view, with rounded base, abruptly narrowed dorsally to a thumblike projection; thumblike projection flattened and gently curved both posteriorly (as viewed laterally) and

proximally (as viewed caudally); proximal surface of base with protuberance as continuation of the caudal edge of thumblike projection, much as if part of surface of base had been curled onto interior, or proximal,

surface. Phallus with only slight apicoventral extension of phallobase; endothecal spines two, subequal, not elongate; tip of phallus, when expanded, bulbous, enlarged, with lesser preapical dorsal expansion, both possessing minute echinate spines, these also on ventral surface and forming, near tip of phallus, a sclerosely echinate region with two elongate, slender, curved spines. Phalлотremal sclerite complex composed of elongate rod and ring structure and apical membranous structure with pair of associated wishbonelike sclerites; when unexpanded, echinate surface of phallus apex appearing as granular region within phallobase, two slender spines closely apposed and appearing as single spine and associated with phalлотremal sclerite complex near base of phallobase.

Holotype: ♂, Costa Rica: Guanacaste: Parque Nacional Guanacaste, Río San Josecito, Estación Mengo, 10.922°N, 85.470°W, el 960 m, 03–04.iv.1987, Holzenthal, Morse, Clausen (NMNH). *Paratypes*: Costa Rica: Alajuela: 7 ♂, Cerro Campana, Río Bochinche trib., 6 km (air) NW Dos Ríos, 10.945°N, 85.413°W, el 600 m, 22–23.vii.1987, Holzenthal, Morse, Clausen (INBIO); 9 ♂ (in alcohol), P. N. (Parque Nacional) Rincón de la Vieja, Quebrada Provisión, 10.769°N, 85.281°W, el 810 m, 04.iii.1986, Holzenthal & Fauth (UMSP); 1 ♂ (in alcohol), Reserva Forestal San Ramón, Río San Lorencito and tribs., 10.216°N, 84.607°W, el 980 m, 30.iii.–01.iv.1987, Holzenthal, Hamilton, Heyn (UMSP); Guanacaste: 10 ♂, same data as holotype (NMNH); 24 ♂ (pinned), 10 ♂, 9 ♀ (in alcohol), same location, 28–29.vii.1987, Holzenthal, Morse, Clausen (UMSP); 11 ♂, P. N. Rincón de la Vieja, Río Negro, 10.765°N, 85.313°W, el 810 m, 03.iii.1986, Holzenthal & Fauth (UMSP); 259 ♂, 2 ♀ (in alcohol), P. N. Rincón de la Vieja, Quebrada Zopilote, 10.765°N, 85.309°W, el 785 m, 03.iii.1986, Holzenthal (UMSP); 2 ♂, P. N. Guanacaste, ca. 0.7 km N Estación Maritza, 10.96°N, 85.50°W, el 550 m, 31.viii.1990,

Huisman & Quesada (UMSP); Heredia: 3 ♂ (in alcohol), Rara Avis Biol. Station, Quebrada Chiquiza, 10.229°N, 84.032°W, el 550 m, 31.iii.1989, Blahnik & Solís (UMSP); Puntarenas: 1 ♂, Río Guineal, ca. 1 km (air) E Finca Helechales, 9.076°N, 83.092°W, 04.viii.1987, Holzenthal, Morse, Clausen (UMSP); San José: 2 ♂, P. N. Braulio Carrillo, Est. Carrillo, Quebrada Sanguijela, 10.160°N, 83.963°W, 27.iii.1987, Holzenthal, Hamilton, Heyn (UMSP).

Etymology: Colmillo, the Spanish word for fang, in reference to the pair of slender, curved spines at the tip of the phallus.

Chimarra guanacasteca

Blahnik and Holzenthal, NEW SPECIES

Fig. 5A–F

This species is closely related to *C. curfmani* Ross. Both species undoubtedly belong within what can be termed the Beameri Group of *Chimarra*, and whose other species include *C. beameri* Ross, *C. acuta* Ross, *C. boneti* Ross, *C. fliniti* Bueno, *C. munozii* n. sp., *C. lata* n. sp., and *C. yanura* n. sp. This species can be recognized by the shape of the inferior appendages being less narrow basally than *C. curfmani* and by the equally short lateral lobes of the tenth tergum.

Male: Forewing length 4.4–4.9 mm. Color rather uniformly fuscous, except femora yellowish. Genitalia: Abdominal segment IX with well-developed anterodorsal apodemes; anteroventral margin considerably extended, margin non-sinuously joined to dorsal apodeme; posteroventral process prominent, broad, triangular. Tergum X membranous mesally, with two short, apically rounded, lateral lobes, each possessing two sensilla on slightly raised prominences. Preanal appendages short, globose. Inferior appendage, in lateral view, with rounded base possessing obtuse apex, and prominent, strongly tapering, dorsal projection (in caudal view obvious that caudal apex is actually rounded and proximally curved from caudal edge); whole of inferior appendage with proximal curvature; base of inferior

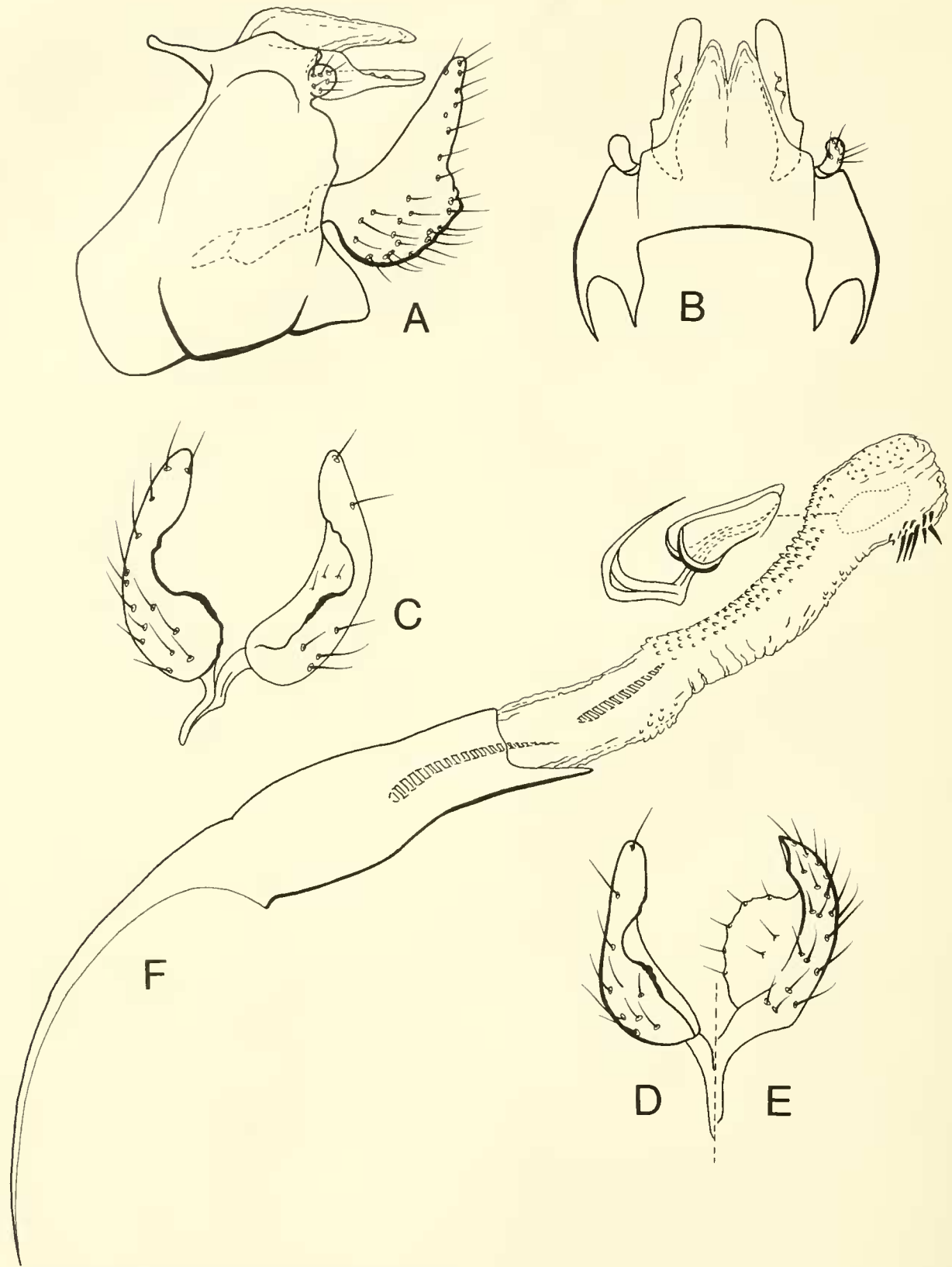


Fig. 5. A-F. *Chimarra guanacasteca* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: enlargement of phallotremal sclerite complex).

appendage with heavily sclerotized, irregular ridge on caudal surface. Phallus with apicoventral extension of apex; endotheal spines two, subequal, of moderate length; endotheca elongate and apex of phallus

slightly inflated, minute echinate spines on endotheca and phallus apex, especially dorsally; cluster of enlarged spines apicoventrally; phallotremal sclerite complex composed of rod and ring (rod short and ring

with pronounced apicodorsal extension), and membranous apical structure with sclerotized anterior margins (appearing fishhooklike); when unexpanded, apex of phallus appearing as granular region with cluster of spines and associated phallotremal sclerite complex, all within phallobase.

Holotype: ♂, Costa Rica: Alajuela: Río Pizote, ca. 5 km N Dos Ríos, 10.948°N, 85.291°W, el 470 m, 09.iii.1986, Holzenthal & Fasth (NMNH). *Paratypes*: Costa Rica: Alajuela: 12 ♂ (in alcohol), same data as holotype (UMSP); 147 ♂ (in alcohol), Río Pizote, ca. 5 km (air) S Brasilia, 10.972°N, 85.345°W, el 390 m, 12.iii.1986, Holzenthal & Fasth (UMSP); Guanacaste: 1 ♂, P. N. (Parque Nacional) Guanacaste, El Hacha, Quebrada Alcornoque, 11.009°N, 85.577°W, el 250 m, 26.vii.1987, Holzenthal, Morse, Clausen (INBIO); 1 ♂, P. N. Guanacaste, El Hacha, Quebrada Pedregal, 10.983°N, 85.539°W, el 300 m, 27.vii.1987, Holzenthal, Morse, Clausen (NMNH); 2 ♂, P. N. Guanacaste, Estación Pitilla, Río Oro-sí, 10.991°N, 85.428°W, el 700 m, 22–25.v.1990, Holzenthal & Blahnik (UMSP); 1 ♂ (in alcohol), Quebrada Garcia, 10.6 km ENE Quebrada Grande, 10.862°N, 85.428°W, el 470 m, 08.iii.1986, Holzenthal & Fasth (UMSP).

Etymology: Named for the Cordillera de Guanacaste of Costa Rica where specimens of the species have been collected.

**Chimarra janzeni Blahnik and Holzenthal,
NEW SPECIES**

Fig. 6A–F

This species is related to a group of species occurring from southwestern United States through Central America, and which can be termed the Primula Group of *Chimarra*, including *C. primula* Denning, *C. ovalis* Ross, *C. volenta* Ross, *C. crena* Bueno, *C. pelaezi* Bueno, and *C. antigua* Flint. All of these species are characterized by having ovate inferior appendages, each with a short, rounded or subtriangular, proximally

curved, dorsal appendage. This particular species can be easily identified by the peculiar structure of the lateral lobes of the tenth tergum, each of which appears to terminate in two, diverging, stalked papillae.

Male: Forewing length 4.9–5.2 mm. Color rather uniformly fuscous, head blackish. Genitalia: Abdominal segment IX with pair of well-developed anterodorsal apodemes, anteroventral margin distinctly extended; posteroventral process short, broadly triangular. Tergum X membranous and deeply cleft mesally, with pair of sclerotized lateral lobes marked by distinctly sclerotized dorsal portion and lightly sclerotized, apically rounded, lateral extension; heavily sclerotized portion terminating in two, diverging, stalked sensilla. Preanal appendages short, globose, slightly flattened. Inferior appendage ovate, dorsally with subtriangular, proximally curved extension, ventrally with obtuse medial extension; proximal surface with short, setose projection near base. Phallus with apicoventral extension of phallobase; phallobase somewhat convergent apically; endothecal spines two, distinctly unequal in length, one long, one short; tip of phallus (apparently) with minute echinate spines; phallotremal sclerite complex composed of short rod and ring structure and membranous apical structure.

Holotype: ♂, Costa Rica: Alajuela: Cerro Campana, Río Bochinche trib., 6 km (air) NW Dos Ríos, 10.945°N, 85.413°W, el 600 m, 22–23.vii.1987, Holzenthal, Morse, Clausen (NMNH). *Paratypes*: Costa Rica: Alajuela: 1 ♂, same data as holotype (INBIO); 1 ♂ (in alcohol), Reserva Forestal San Ramón, Río San Lorencito & tribs., 10.216°N, 84.607°W, el 980 m, 02–04.vii.1986, Holzenthal, Heyn, Armitage (UMSP); 2 ♂, same location, 06–10.iii.1991, Holzenthal, Muñoz, Huisman (UMSP).

Etymology: Named for Daniel Janzen, in honor of his many contributions to Costa Rican ecology, systematics, and conservation.

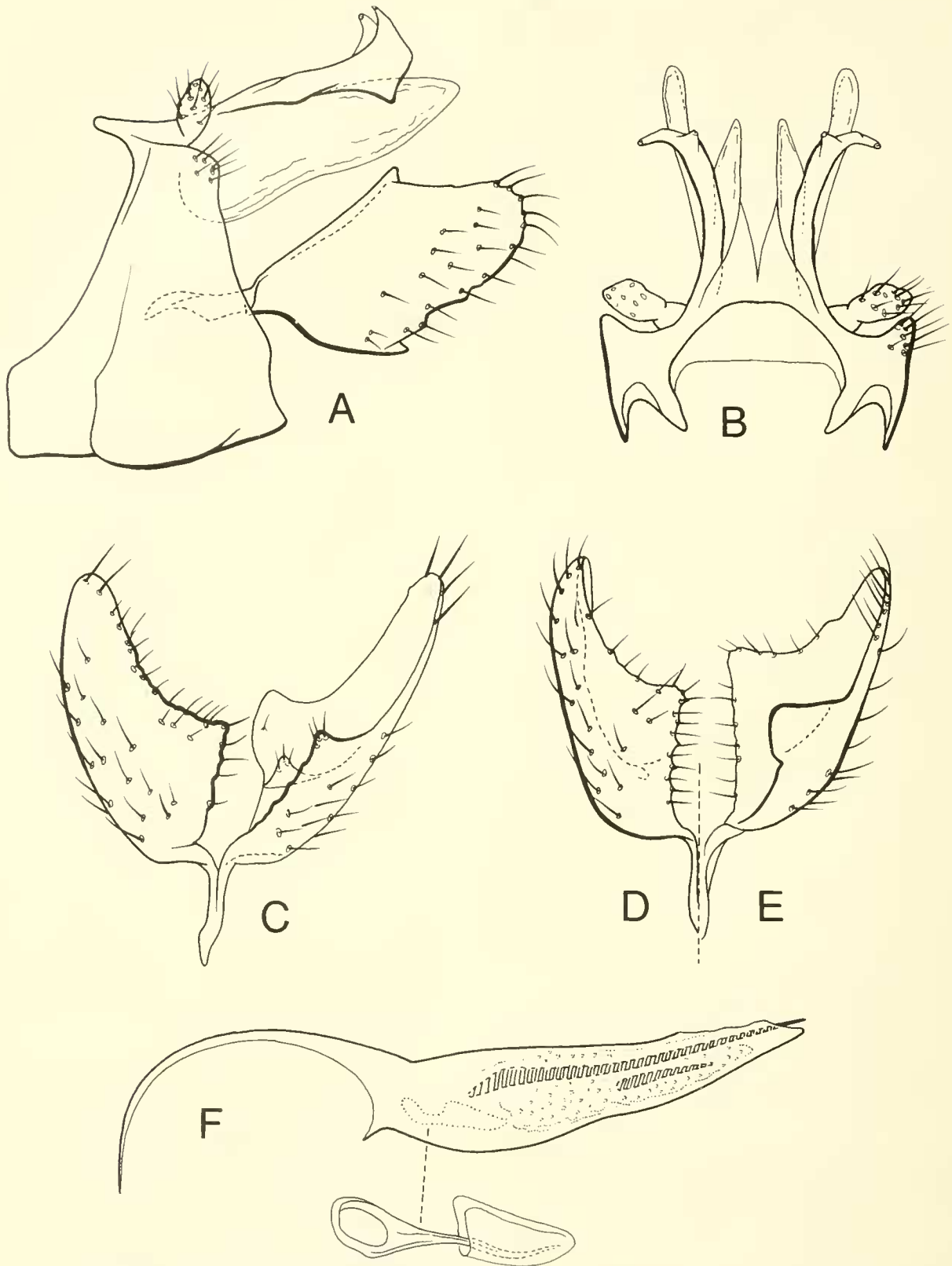


Fig. 6. A-F. *Chimarra janzeni* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, ventral; E, inferior appendage, dorsal; F, phallus (inset: enlargement of phallotremal sclerite complex).

***Chimarra jemima* Blahnik and Holzenthal,
NEW SPECIES
Fig. 7A-D**

This species is closely related to *C. emima* Ross, but differs in having more elongate

inferior appendages and a tenth tergum with lateral lobes having broadly rounded lateral projections. It also differs in having a distinct, small, acute projection from the basal portion of the tenth tergum. It belongs to a group of species which can be called the

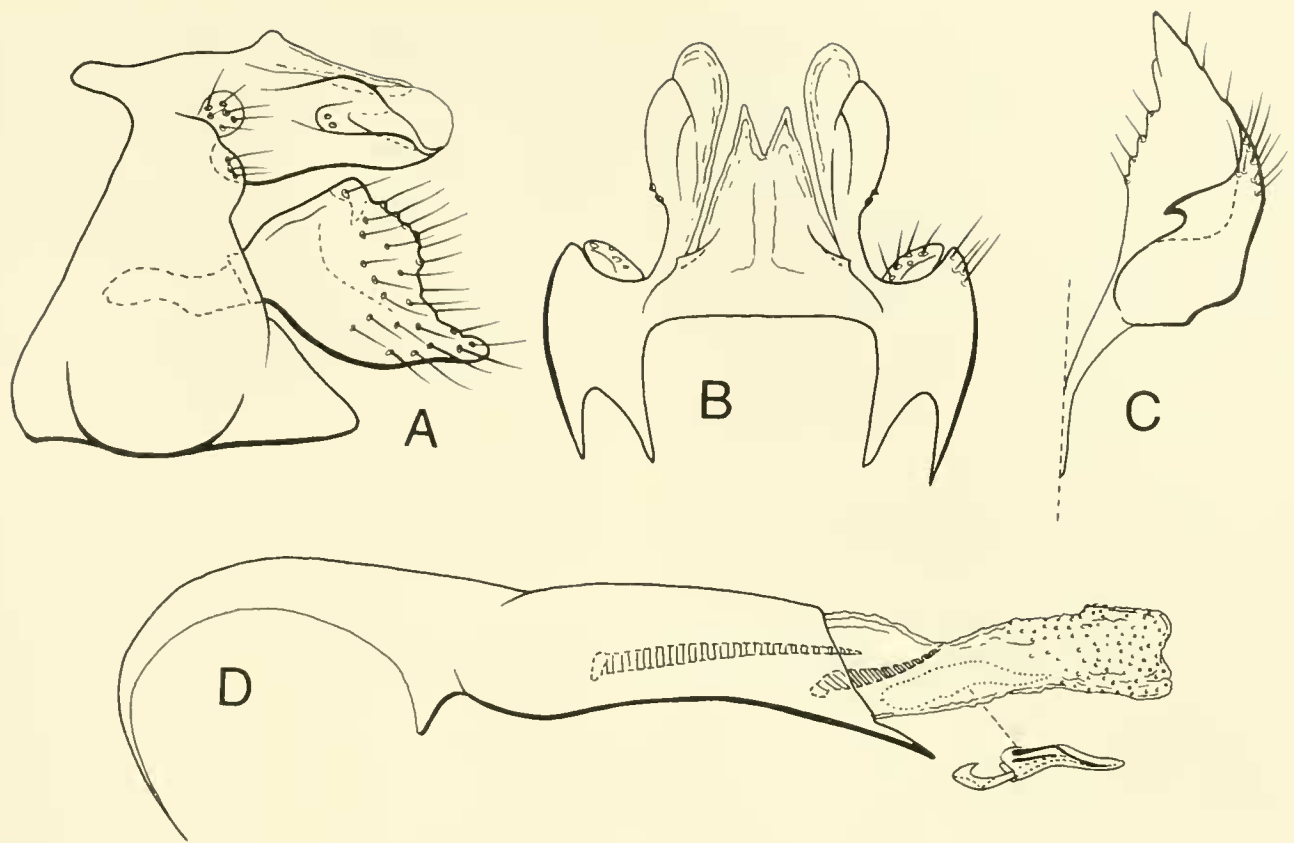


Fig. 7. A–F. *Chimarra jemima* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendage, dorsal; D, phallus (inset: phallobotremal sclerite complex).

Emima Group, including *C. emima* Ross, *C. setosa* Ross, *C. creagra* Flint, *C. decimlobata* Flint and *C. onima* Flint.

Male: Forewing length 4.9–5.5 mm. Color rather uniformly fuscous black, except head darker and femora yellowish to yellowish-brown. Head moderately elongate and dorsally flattened. Genitalia: Abdominal segment IX with pair of prominent apodemes from anterodorsal margin; anteroventral margin gradually expanded from dorsal apodemes; posteroventral process broadly triangular and prominent. Tergum X membranous mesally, with two short, sclerotized, lateral lobes, each with broadly rounded lateral projection bearing a pair of sensilla near base, and terminating in a short, rounded membranous tip; base of tergum X with pair of distinct, small, acute projections. Inferior appendages relatively short, tapering to distinct, acute apical point, dorsally with short proximally curved process, appearing as acutely hooked process when viewed dorsally, but actually with rounded

tip. Phallobase with acute apicoventral projection; endothecal spines two, of moderate length, one usually longer than other; apex of phallus with minute echinate spines. Phallobotremal sclerite complex composed of rod and ring structure, rod relatively short and ring with slight dorsal projection, apically with membranous structure with pair of lightly sclerotized lateral strips near dorsal margin.

Holotype: ♂, Costa Rica: Alajuela: Río Toro, 3.0 km (road) SW Bajos del Toro, 10.204°N, 84.316°W, el 1530 m, 03–04.ix.1990, Holzenthal, Blahnik, Huisman (NMNH). *Paratypes*: Costa Rica: Alajuela: 2 ♂ (pinned), 1 ♂ (in alcohol), Reserva Bosque Nubosa, Monteverde, Río Peñas Blancas, 10.30°N, 84.74°W, el 950 m, 01.iii.1986, Holzenthal & Fasth (UMSP); 4 ♂, Río Sarapiquí, ca. 2 km SE Cariblanco, 10.299°N, 82.172°W, el 710 m, 22.vi.1986, Holzenthal, Heyn, Armitage (UMSP); 4 ♂, Reserva Forestal San Ramón, Río San Lorencito & tribs., 10.216°N, 84.607°W, el 980 m, 05–

- 09.vii.1986, I. & A. Chacón (INBIO); 3 ♂, same location, 24–27.ii.1987, I. & A. Chacón (UMSP); 7 ♂ (pinned), 53 ♂ (in alcohol), same location, 30.iii.–01.iv.1987, Holzenthal, Hamilton, Heyn (UMSP); 2 ♂ (pinned), 9 ♂ (in alcohol), same location, 02–04.vii.1986, Holzenthal, Heyn, Armitage (UMSP); 6 ♂, same location, 01–04.v.1990, Holzenthal & Blahnik (UMSP); 9 ♂, same location, 28–30.vii.1990, Holzenthal, Blahnik, Muñoz (UMSP); 17 ♂, same location, 06–10.iii.1991, Holzenthal, Muñoz, Huisman (INBIO); 2 ♂ (in alcohol), Cerro Campana, Río Bochinche trib., 6 km (air) NW Dos Ríos, 10.945°N, 85.413°W, el 600 m, 22–23.vii.1987, Holzenthal, Morse, Clausen (UMSP); 1 ♂ (in alcohol), P. N. (Parque Nacional) Rincón de la Vieja, Quebrada Provisión, 10.769°N, 85.281°W, el 810 m, 04.iii.1986, Holzenthal & Fasth (UMSP); 3 ♂, same data as holotype (NMNH); 1 ♂, Quebrada Latas, 8.9 km NE Bajos del Toro, 10.269°N, 84.260°W, el 1030 m, 06.ix.1990, Holzenthal, Blahnik, Huisman (INBIO); 2 ♂, Río Agrío, ca. 3.5 km NE Bajos del Toro, 10.243°N, 84.279°W, el 1290 m, 20.viii.1990, Holzenthal et al. (UMSP); 11 ♂, Río Toro, 3.0 km (road) SW Bajos del Toro, 10.204°N, 84.316°W, el 1530 m, 03–04.ix.1990, Holzenthal, Blahnik, Huisman (UMSP); Cartago: 1 ♂ (pinned), 12 ♂ (in alcohol), Quebrada Platanillo, ca. 5 km E Moravia de Chiripó, 9.821°N, 83.407°W, el 1130 m, 06.viii.1987, Holzenthal, Morse, Clausen (UMSP); 10 ♂, 14 ♀ (in alcohol), Pejibaye, 22–24.iii.1987, W. E. Steiner (NMNH); 1 ♂, 3 ♀ (in alcohol), Turrialba, 17–21.ii.1965, S. S. & W. D. Duckworth (NMNH); 4 ♂, 2 ♀ (in alcohol), Turrialba, 26.viii.1972, G. F. & S. Hevel (NMNH); 4 ♂ (in alcohol), 3 mi W Turrialba, 18–21.vi.1967, Flint & Ortiz (NMNH); 1 ♂ (in alcohol), Chitaria, 19.vi.1967, Flint & Ortiz (NMNH); 1 ♂, Río Chitaria, route 10, 10 km NW Río Reventazón, 9.920°N, 83.604°W, el 740 m, 21.iii.1991, Holzenthal, Muñoz, Huisman (UMSP); 1 ♂, Río Reventazón in CATIE along Sendero Espavales, 9.893°N, 83.651°W, el 500 m, 22.iii.1991, Muñoz (UMSP); Guanacaste: 1 ♂ (in alcohol), Quebrada, Garcia, 10.6 km ENE Quebrada Grande, el 470 m, 08.iii.1986, Holzenthal & Fasth (UMSP); 3 ♂, P. N. Guanacaste, Estación Maritza, Río Tempisquito, 10.958°N, 85.497°W, el 550 m, 30–31.viii.1990, Huisman, Blahnik, Quesada (UMSP); Limón: 1 ♂, Río Barbilla, ca. 8 km W B-Line, 10.067°N, 83.369°W, el 30 m, 31.i.1986, Holzenthal, Morse, Fasth (UMSP); Puntarenas: 6 ♂ (pinned), 7 ♂ (in alcohol), Río Jaba at rock quarry, 1.4 km (air) W Las Cruces, 8.79°N, 82.97°W, el 1150 m, 14.vi.1986, Holzenthal, Heyn, Armitage (UMSP); 7 ♂, same location, 09.viii.1990, Holzenthal, Blahnik, Muñoz (UMSP); 11 ♂, same location, 15.iii.1991, Holzenthal, Muñoz, Huisman (UMSP); 1 ♂ (in alcohol), Río Jaba, 2.4 km (air) NW San Vito, 8.832°N, 82.991°W, 13.vi.1986, Holzenthal, Heyn, Armitage (UMSP); 3 ♂ (pinned), 17 ♂, 12 ♀ (in alcohol), Río Guineal, ca. 1 km (air) E Finca Helechales, 9.076°N, 83.092°W, el 840 m, 04.viii.1987, Holzenthal, Morse, Clausen (UMSP); 24 ♂ (in alcohol), same location, 22.ii.1986, Holzenthal, Morse, Fasth (UMSP); 18 ♂ (pinned), 7 ♂ (in alcohol), Río Bellavista, ca. 1.5 km NW Las Alturas, 8.951°N, 82.846°W, el 1400 m, 08–09.iv.1987, Holzenthal, Hamilton, Heyn (UMSP); 1 ♂, same location, 02–03.viii.1987, Holzenthal, Morse, Clausen (UMSP); 1 ♂ (in alcohol), same location, 15–17.vi.1986, Holzenthal, Heyn, Armitage (UMSP); 1 ♂, same location, 16–17.iii.1991, Holzenthal, Muñoz, Huisman (UMSP); 2 ♂, Río Cotón in Las Alturas, 8.938°N, 82.826°W, el 1360 m, 12.viii.1990, Holzenthal, Blahnik, Muñoz (UMSP); 1 ♂ (in alcohol), Río Singrí, ca. 2 km (air) S Finca Helechales, 9.057°N, 83.082°W, el 720 m, 21.ii.1986, Holzenthal, Morse, Fasth (UMSP); San José: 9 ♂, P. N. Braulio Carrillo, Estación Carrillo, Quebrada Sanguijuela, 10.160°N, 83.963°W, el 800 m, 27.iii.1987, Holzenthal, Hamilton, Heyn (UMSP); 2 ♂, same location, 22–28.-

viii.1986, I. & A. Chacón (UMSP); 3 ♂, same location, 11–12.vi.1988, C. M. & O. S. Flint, Holzenthal (NMNH).

Etymology: Jemima, a woman's name, chosen for its aliterative similarity to other described members of this group (*C. emima* Ross and *C. onima* Flint).

Chimarra lata Blahnik and Holzenthal,
NEW SPECIES
 Fig. 8A–F

This species is also a member of the Beameri Group of *Chimarra*, but differs from other described species of this group by having much broader inferior appendages.

Male: Forewing length 4.1–4.5 mm. Color rather uniformly fuscous, except femora and distal portion of trochanters yellowish. Genitalia: Abdominal segment IX with prominent anterodorsal apodemes, anteroventral margin distinctly extended, joined linearly from dorsal apodemes to rounded ventrolateral margin; posteroventral process short, broadly triangular. Tergum X membranous mesally, with pair of sclerotized lateral lobes; lateral lobes spatulate, with two sensilla preapically, creased apically along lateral margin. Preanal appendages short, somewhat flattened and knob-like. Inferior appendages angled dorso-posteriorly, proximally curved (in caudal view), of nearly uniform width, except narrowed apically and shallowly, sinuously indentate near middle along caudal edge; inferior appendage serrate caudally near apex, with serrations continuing as ridge along proximal surface of caudal edge; prominent setose projection on proximal surface near base. Phallus with apicoventral extension of phallobase; endothecal spines two, subequal, elongate; tip of phallus (apparently) with minute, echinate spines and irregular cluster of enlarged spines; phallotremal sclerite composed of rod and ring structure (rod short and curved and ring with prominent apicodorsal extension), and membranous apical structure with pair of fish-hook-like sclerites along anterior edge.

Holotype: ♂, Costa Rica: Guanacaste: Parque Nacional Guanacaste, ca. 0.7 km N Estación Maritza, 10.96°N, 85.50°W, el 550 m, 31.viii.1990, Huisman & Quesada (NMNH). *Paratypes*: Costa Rica: Alajuela: 4 ♂ (in alcohol), Río Pizote, ca. 5 km (air) S Brasilia, 10.972°N, 85.345°W, el 390 m, 12.iii.1986, Holzenthal & Fasth (UMSP); Guanacaste: 1 ♂, P. N. (Parque Nacional) Guanacaste, Estación Pitilla, Río Orosí, 10.991°N, 85.428°W, el 700 m, 19–20.vi.1988, C. M. & O. S. Flint, Holzenthal (NMNH); 3 ♂, same location, 22–25.v.1990, Holzenthal & Blahnik (UMSP); Heredia: 1 ♂, Río Bijagual on road to Magsasay, el 140 m, 12.ii.1986, Holzenthal, Morse, Fasth (INBIO); 1 ♂ (in alcohol), Estación Biológica La Selva, Río Puerto Viejo, 10.440°N, 84.012°W, el 30 m, 19.vi.1986, Holzenthal, Heyn, Armitage (UMSP).

Etymology: Lata, from the Latin *latus*, meaning wide or broad, and referring to the broad inferior appendages of this species.

Chimarra longiterga
Blahnik and Holzenthal, NEW SPECIES
 Fig. 9A–F

This is a unique species of *Chimarra* with a probable relationship to *C. amica* n. sp., and also possibly with more distant relationships to *C. dentosa* Ross and *C. alata* Bueno. It is readily identified by the elongate lobes of the tenth tergum. Other characteristic features are the elongate endothecal spines, the elongate, deflexed apicoventral extension of the phallobase, the elongate, spinelike process in the phallus with a basal sclerous curl, and the extensively developed anteroventral margin of the ninth abdominal segment. Several of the collection localities for this species were at, or near, shallow spring seeps and trickling waterfalls, suggesting that this may represent the larval habitat for this species. It undoubtedly has an interesting biology in addition to a unique appearance.

Male: Forewing length 4.4–6.0 mm. Color rather uniformly fuscous black, except

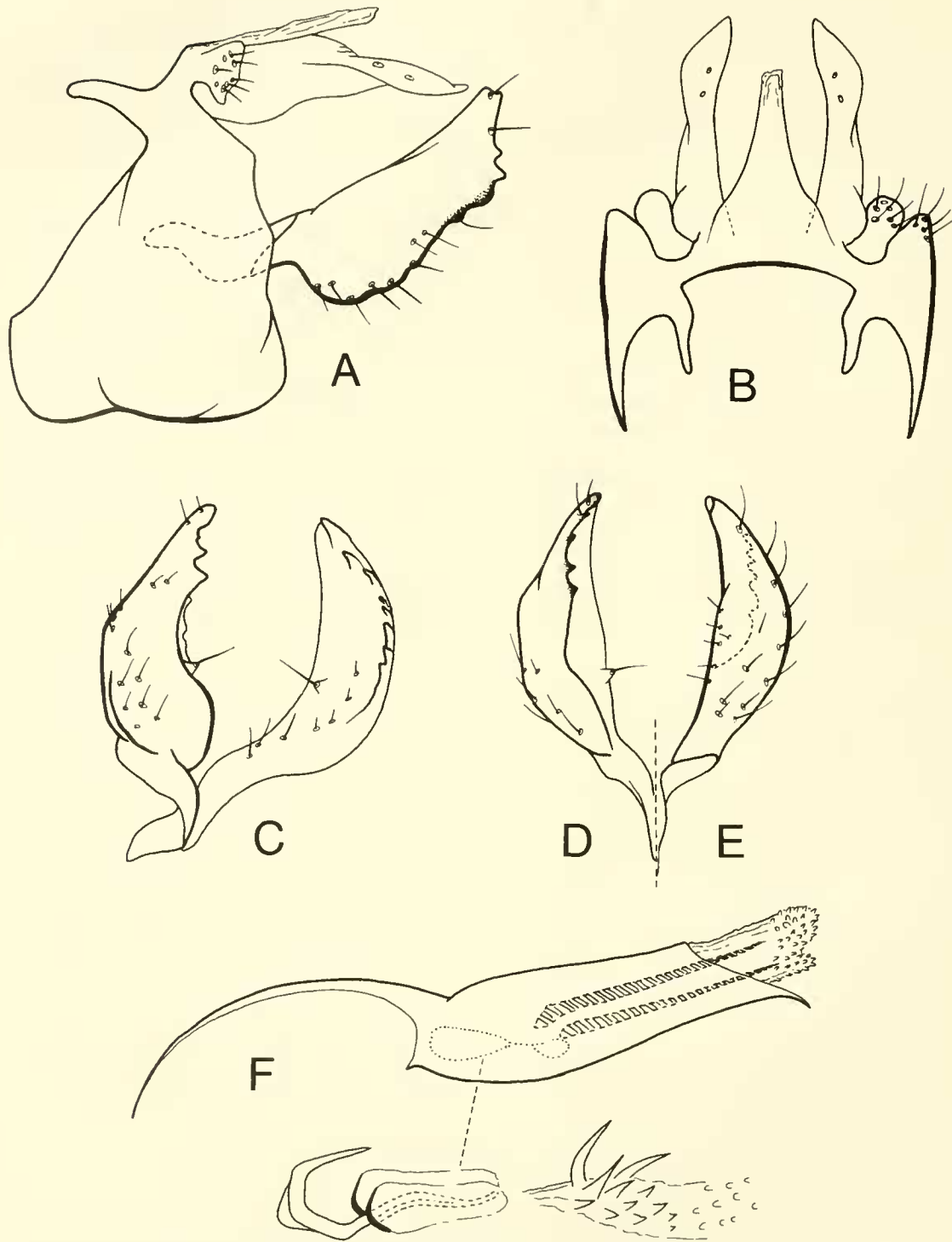


Fig. 8. A-F. *Chimarra lata* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, ventral; E, inferior appendage, dorsal; F, phallus (inset: enlargement of phallotremal sclerite complex and cluster of phallic spines).

femora yellowish-brown. Genitalia: Abdominal segment IX, in lateral view, with anteroventral margin dramatically sinuously elongate, and with pair of well-developed anterodorsal apodemes; posteroventral process of moderate length, narrow, subacute. Tergum X membranous mesally, with two elongate, linear, sclerotized lateral lobes, each with a pair of sensilla on slightly raised

prominence near base. Preanal appendages, short, somewhat flattened. Inferior appendages, in lateral view, with rounded base bearing acute caudal apex and elongate, tapered, dorsal process; dorsal process slightly angled posteriorly (in lateral view) and gently curved proximally (in caudal view); proximal surface of base with conspicuous setose process and ridge, formed as if part of edge

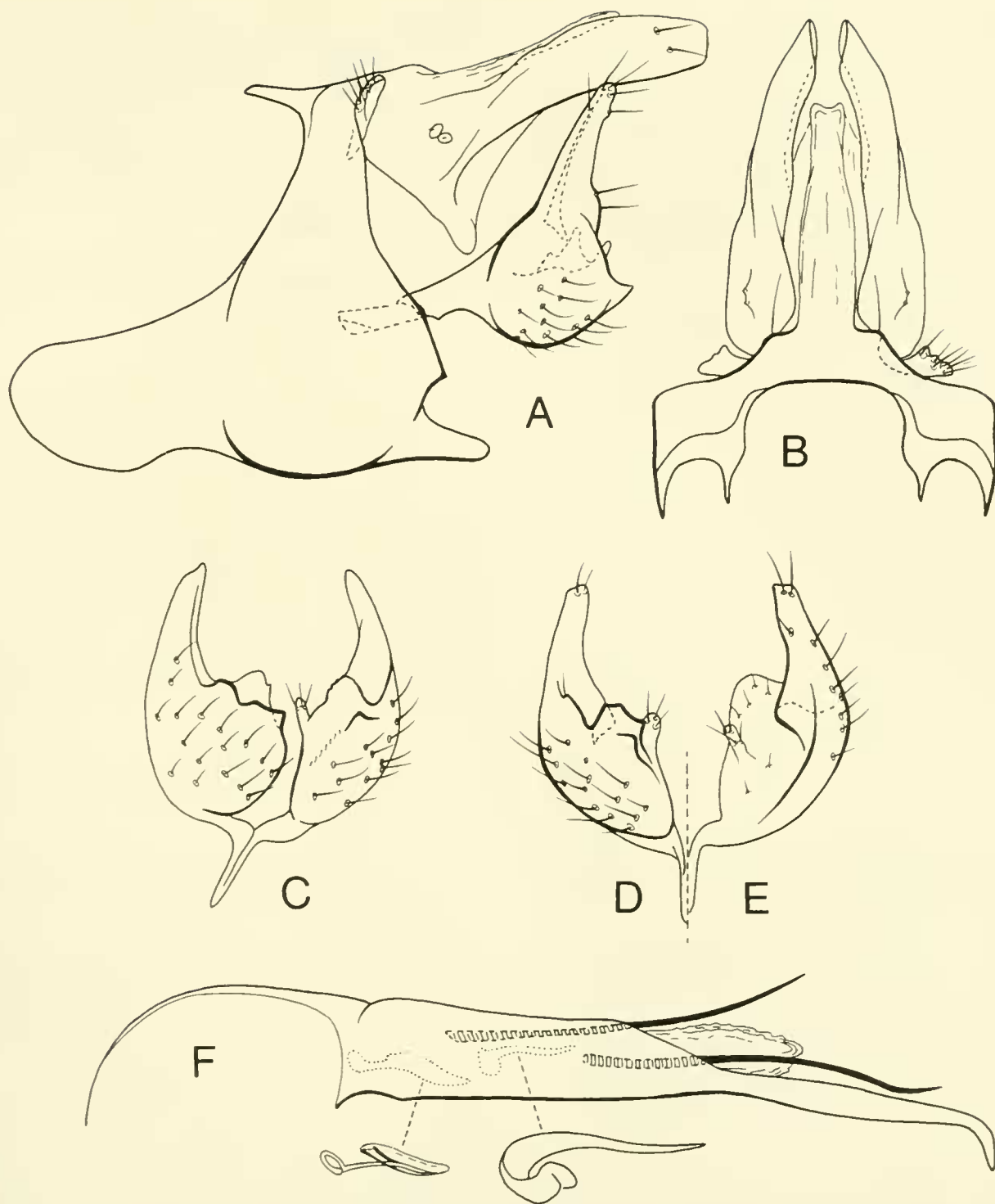


Fig. 9. A-F. *Chimarra longiterga* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (insets: phallotremal sclerite complex, and enlargement of sclerous curl and spine).

of base had been curled onto proximal surface of inferior appendage. Phallus with elongate apicoventral extension to phallobase, extension decurved near apex; endothecal spines two, slender, elongate; tip of phallus (apparently) with pronounced sclerous curl attached to elongate spinelike process, tip of phallus not (or only inconspicuously) echinate; phallotremal sclerite

complex composed of rod and ring structure and apical membranous structure with associated pair of wishbonelike sclerites.

Holotype: ♂, Costa Rica: Puntarenas: Parque Nacional Corcovado, Piedra el Arco, 8.582°N, 83.709°W, el 20 m, 10-11.iv.1989, Holzenthal & Blahník (NMNH). *Paratypes*: Costa Rica: Alajuela: 1 ♂ (in alcohol), Cerro Campana, Río Bochinche trib., 6 km (air)

NW Dos Ríos, 10.945°N, 85.413°W, el 600 m, 22–23.vii.1987, Holzenthal, Morse, Clausen (UMSP); 1 ♂ (in alcohol), P. N. (Parque Nacional) Rincón de la Vieja, Quebrada Provisión, 10.769°N, 85.281°W, el 810 m, 04.iii.1986, Holzenthal & Fasth (UMSP); 1 ♂ (in alcohol), Reserva Bosque Nubosa, Monteverde, Río Peñas Blancas, 10.30°N, 84.74°W, el 950 m, 01.iii.1986, Holzenthal & Fasth (UMSP); 1 ♂, Reserva Forestal San Ramón, Río San Lorencito and tribs., 10.216°N, 84.607°W, 13–16.vi.1988, C. M. & O. S. Flint, Holzenthal (NMNH); 1 ♂, Río Agrio, ca. 3.5 km NE Bajos del Toro, 10.243°N, 84.279°W, el 1290 m, 20.viii.1990, Holzenthal et al. (UMSP); 1 ♂, Quebrada Latas, 8.9 km NE Bajos del Toro, 10.269°N, 84.260°W, el 1030 m, 06.ix.1990, Holzenthal, Blahnik, Huisman (UMSP); Guanacaste: 2 ♂, P. N. Guanacaste, Maritza, Río Tempisquito, 10.958°N, 85.497°W, el 550 m, 19–20.vii.1987, Holzenthal, Morse, Clausen (INBIO); 2 ♂, P. N. Guanacaste, El Hacha, Quebrada Pedregal, 10.983°N, 85.539°W, el 300 m, 27.vii.1987, Holzenthal, Morse, Clausen (INBIO); 1 ♂, P. N. Guanacaste, Estación Pitilla, Río Orosí, 10.991°N, 85.428°W, el 700 m, 22–25.v.1990, Holzenthal & Blahnik (UMSP); Heredia: 4 ♂ (in alcohol), Estación Biológica La Selva, Río Puerto Viejo, 10.440°N, 84.012°W, el 30 m, 19.vi.1986, Holzenthal, Heyn, Armitage (UMSP); Puntarenas: 4 ♂, Río Jaba at rock quarry, 1.4 km (air) W Las Cruces, 8.79°N, 82.97°W, el 1150 m, 09.viii.1990, Holzenthal, Blahnik, Muñoz (UMSP); Panama: 2 ♂, Boquette, 16–17.vii.1967, O. S. Flint, Jr. (NMNH); San Blas: 2 ♂, 4 ♀, Nusagandi, 9°20'N, 78°56'W, el 350 m, 01–06.iii.1985, Flint & Louton (NMNH); Canal Zone: 1 ♂, Barro Colorado Island, 12.iii.1967, M. E. Irwin (UCR); Coclé: 2 ♂, 4 ♀, El Valle, 829 m, 25.v.1983, P. J. Spangler, R. A. Faitoute, W. E. Steiner (NMNH); 4 ♂, 2 ♀, El Valle, 15.vii.1967, O. S. Flint, Jr. (NMNH); Ecuador: Manabi: 1 ♂, Santo Domingo de los Colorados (79 km

W), 08.v.1975, A. B. Gurney (NMNH); Pichincha: 1 ♂ (in alcohol), Santo Domingo (47 km S), Río Palenque Biol. Station, el 750 ft, 29.vii.1976, J. Cohen (NMNH).

Etymology: Longiterga, meaning long tergum, in reference to the elongate tenth tergum of this species.

Chimarra munozi Blahnik and Holzenthal,
NEW SPECIES
 Fig. 10A–F

This species also belongs within the Beameri Group of *Chimarra*. It is quite similar to *C. beameri* Denning, but can be recognized from that species by the structure of the lateral lobes of the tenth tergum, which in this species are strongly apically deflexed and spatulate in shape. It also resembles *C. yanura* n. sp., but differs in that the apex of the lateral lobes of the tenth tergum lack acute lateral projections, and also by differences in the structure of the apex of the dorsal process of the inferior appendage. Like *C. guanacasteca* n. sp., but unlike *C. beameri* and *C. yanura*, it has a cluster of sclerotized spines associated with the apex of the phallus.

Male: Forewing length 4.1–4.9 mm. Color rather uniformly fuscous to fuscous black, except femora yellowish. Genitalia: Abdominal segment IX with distinct anterodorsal apodemes; anteroventral margin distinctly extended, non-sinuously, from dorsal apodemes; posteroventral process prominent, triangular. Tergum X membranous mesally, with two sclerotized, spatulate, lateral lobes, apically rounded and with two preapical sensilla; apex of lateral lobes ventrally deflexed and with crease along outer margin. Preanal appendages small, globose, slightly flattened. Inferior appendage with rounded base and broad, posteriorly directed, proximally curved, dorsal projection. Phallus with acute apicoventral extension of phallobase; endothecal spines two, subequal, of moderate length; apex of phallus with minute, echinate spines and heavily

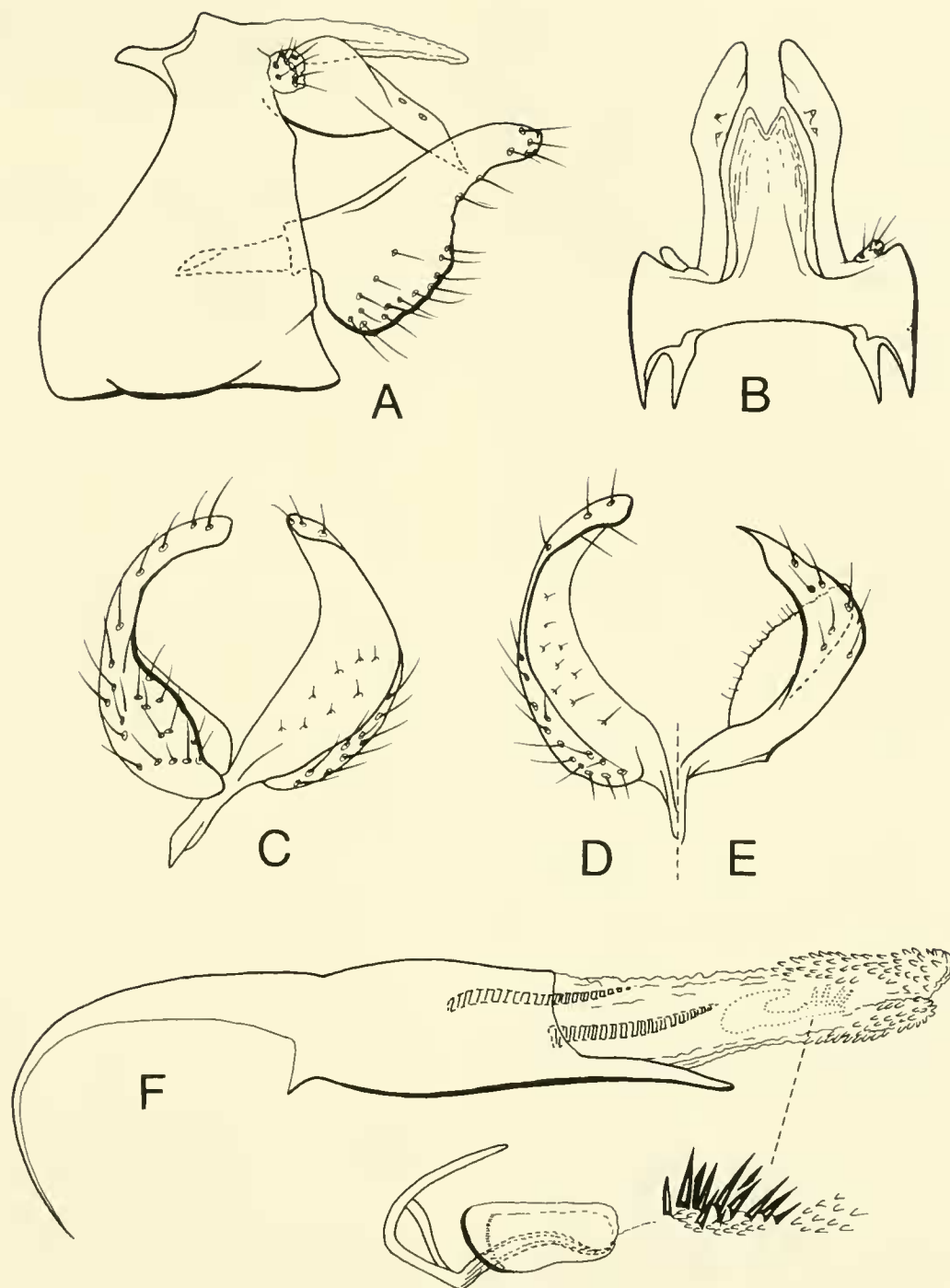


Fig. 10. A–F. *Chimarra munozi* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: enlargement of phallosomal sclerite complex and cluster of phallic spines).

sclerotized cluster of enlarged spines; phallosomal sclerite complex composed of rod and ring structure (rod short and curved, ring with pronounced apicodorsal extension), and membranous apical structure with pair of fish-hooklike sclerites.

Holotype: ♂, Costa Rica: Heredia: Parque Nacional Braulio Carrillo, Estación Mag-sasay, Río Peje, 10.402°N, 84.050°W, el 130

m, 25–26.viii.1990, Holzenthal, Blahnik, Huisman (NMNH). *Paratypes*: Costa Rica: Alajuela: 5 ♂ (in alcohol), Reserva Forestal San Ramón, Río San Lorencito & tribs., 10.216°N, 84.607°W, el 980 m, 30.iii.–01.iv.1987, Holzenthal, Hamilton, Heyn (UMSP); 1 ♂ (in alcohol), Río Pizote, ca. 5 km N Dos Ríos, 10.958°N, 85.291°W, el 470 m, 09.iii.1986, Holzenthal & Fasth

(UMSP); 1 ♂, Quebrada Latas, 8.9 km NE Bajos del Toro, 10.269°N, 84.260°W, el 1030 m, 06.ix.1990, Holzenthal, Blahnik, Huisman (UMSP); Guanacaste: 3 ♂ (in alcohol), P. N. (Parque Nacional) Guanacaste, Maritza, Río Tempisquito, 10.958°N, 85.497°W, el 550 m, 19–20.vii.1987, Holzenthal, Morse, Clausen (UMSP); 4 ♂, 1 ♀, same location, 17–18.vi.1988, C. M. & O. S. Flint, Holzenthal (NMNH); 9 ♂ (in alcohol), Río Góngora (sulfur mine), 4 km (air) NE Quebrada Grande, 10.887°N, 85.470°W, el 590 m, 21.vii.1987, Holzenthal, Morse, Clausen (UMSP); 1 ♂ (in alcohol), Quebrada Garcia, 10.6 km ENE Quebrada Grande, 10.862°N, 85.428°W, el 470 m, 08.iii.1986, Holzenthal & Fasth (UMSP); 2 ♂, 2 ♀, P. N. Guanacaste, Estación Pitilla, Río Orosi, 10.991°N, 85.428°W, el 700 m, 19–20.vi.1988, C. M. & O. S. Flint, Holzenthal (NMNH); 8 ♂, same location, 22–25.v.1990, Holzenthal & Blahnik (UMSP); Heredia: 29 ♂, same data as holotype (NMNH); 63 ♂, 2 ♀, P. N. Braulio Carrillo, Estación El Ceibo, Río Peje, 10.327°N, 84.078°W, el 480 m, 29–31.v.1990, Holzenthal, Blahnik, Muñoz (UMSP); Limón: 12 ♂, P. N. Braulio Carrillo, Quebrada González, 10.160°N, 83.939°W, el 480 m, 12–14.v.1990, Holzenthal & Blahnik (INBIO); Puntarenas: 2 ♂ (in alcohol), Río Singrú, ca. 2 km (air) S Finca Helechales, 9.057°N, 83.082°W, el 720 m, 21.ii.1986, Holzenthal, Morse, Fasth (UMSP); San José: 1 ♂ (in alcohol), P. N. Braulio Carrillo, Estación Carrillo, Quebrada Sanguijuela, 10.160°N, 83.963°W, el 800 m, 27.iii.1987, Holzenthal, Hamilton, Heyn (UMSP); 1 ♂, P. N. Braulio Carrillo, Estación Carrillo, Quebrada Sanguijuela, 10.160°N, 83.963°W, el 800 m, 27.iii.1987, Holzenthal, Hamilton, Heyn (UMSP).

Etymology: Named for Fernando Muñoz Quesada, INBio curator and member of "Projecto Trichoptera," project name for the effort to completely inventory and describe the caddisfly fauna of Costa Rica.

Chimarra paraortiziana

Blahnik and Holzenthal, NEW SPECIES

Fig. 11A–F

This species is nearly identical to *C. ortiziana* Flint in the shape of inferior appendages and the structure of the phallus, but differs considerably from that species in the structure of the lateral lobes of the tenth tergum. In the latter character, however, it much resembles *C. peineta* n. sp., but differs somewhat in the form of the sensilla-bearing lateral lobes, which in this species are inwardly concave from their anterior margin. It can be identified by the character combination of the structure of the tenth tergum, inferior appendages with relatively straight, dorsal, thumblike projections, and by the possession of a sclerous curl in the phallus, possessing minute sclerotized spines, but no elongate spines.

The Ortiziana Group of species presents much confusion in that the individual species often seem to possess character combinations from other species. However, the various forms show considerable homogeneity within their respective ranges. It may be that *C. paraortiziana* is actually conspecific with *C. ortiziana* Flint, perhaps having acquired characters introgressively from *C. peineta* n. sp. in the region of overlap between the species. Until this (or some other) scenario can be ascertained, it seems best to regard these two and all the other diagnosable forms as distinct species.

Male: Forewing length 4.2–5.3 mm. Color rather uniformly fuscous, except head somewhat darker and femora yellowish-brown. Genitalia: Abdominal segment IX, in lateral view, with distinct sinuous extension of the anteroventral margin and with short apodemelike projections from the anterodorsal margin; posteroventral process rather elongate, triangular. Tergum X membranous mesally, with two heavily sclerotized lateral lobes, each bearing midlateral, broadly rounded, expansion, with two sen-

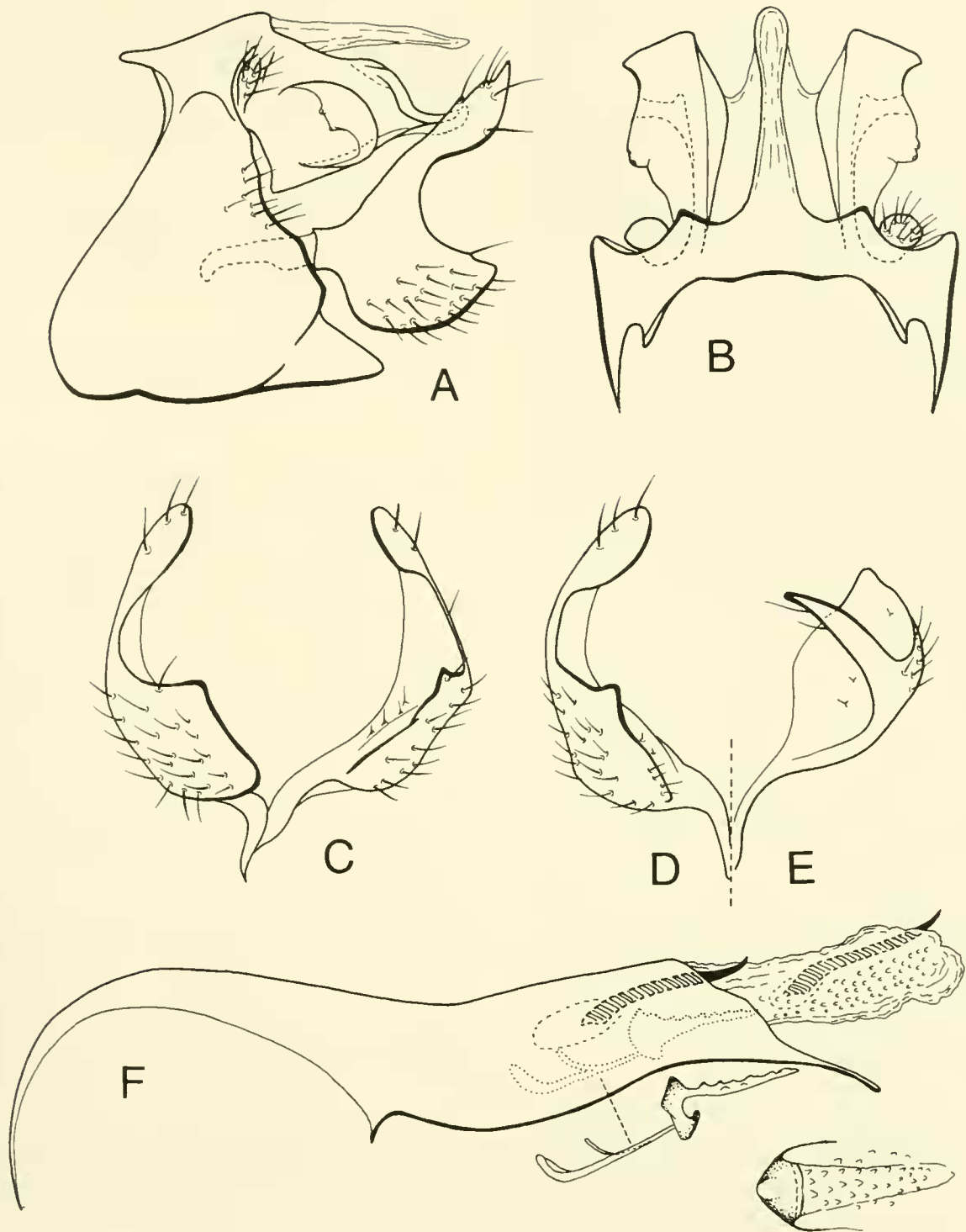


Fig. 11. A-F. *Chimarra paraortiziana* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (insets: phallotremal sclerite complex and sclerous curl, and dorsal enlargement of sclerous curl).

silla on small nipplelike projections; mid-lateral expansion of lateral lobe inwardly concave from the anterior margin (visible as viewed laterally); terminus of lateral lobe flattened and acutely angled at the outer edge. Inferior appendages, in lateral view, with rounded base and acute apex, sinu-

ously connected from caudal margin to flattened, elongate, dorsal, thumblike projection; thumblike projection only slightly curved posteriorly (as viewed laterally), and moderately curved proximally (as viewed caudally). Phallus with pronounced apico-ventral extension of phallobase; endothelial

spines two, subequal, relatively short; tip of phallus with minute, echinate spines and distinctive sclerotized region forming a curl, and in which echinate spines are also sclerotized. Phallotremal sclerite complex composed of elongate rod and ring structure, and apical membranous structure with associated pair of wishbonelike sclerites.

Holotype: ♂, Costa Rica: Heredia: Estación Biológica La Selva, Quebrada El Salto, 10.427°N, 84.005°W, el 50 m, 10.ii.1986, Holzenthal (NMNH). *Paratypes*: Costa Rica: Alajuela: 22 ♂ (in alcohol), P. N. (Parque Nacional) Rincón de la Vieja, Quebrada Provisión, 10.769°N, 85.281°W, el 810 m, 04.iii.1986, Holzenthal & Fasth (UMSP); 2 ♂ (in alcohol), Cerro Campana, R. Bochinché trib., 6 km (air) NW Dos Ríos, 10.945°N, 85.413°W, el 600 m, 22–23.vii.1987, Holzenthal, Morse, Clausen (UMSP); 2 ♂ (in alcohol), Reserva Forestal San Ramón, Río San Lorencito & tribs., 10.216°N, 84.607°W, el 980 m, 30.iii–01.iv.1987, Holzenthal, Hamilton, Heyn (UMSP); Cartago: 1 ♂, 1 ♀ (in alcohol), Lago Orosi, 1.9 km SE Ujarrás, 9.824°N, 83.825°W, el 980 m, 29.i.1986, Holzenthal, Morse, Fasth (UMSP); 1 ♂ (in alcohol), Río Platanillo, 2.2 km E Tayutic, 9.82°N, 83.55°W, el 730 m, 30.i.1986, Holzenthal, Morse, Fasth (UMSP); Guanacaste: 1 ♂ (in alcohol), Quebrada Garcia, 10.6 km ENE Quebrada Grande, 10.862°N, 85.428°W, el 470 m, 08.iii.1986, Holzenthal & Fasth (UMSP); 1 ♂ (in alcohol), Río Los Ahogados, 11.3 km ENE Quebrada Grande, 10.865°N, 85.423°W, el 470 m, 07.iii.1986, Holzenthal & Fasth (UMSP); 8 ♂ (in alcohol), P. N. Guanacaste, El Hacha, Quebrada Alcornoque, 11.009°N, 85.577°W, el 250 m, 26.vii.1987, Holzenthal, Morse, Clausen (NMNH); 5 ♂, P. N. Guanacaste, Estación Pitilla, Río Orosí, 10.991°N, 85.428°W, el 700 m, 22–25.v.1990, Holzenthal & Blahnik (UMSP); Heredia: 10 ♂ (in alcohol), Estación Biológica La Selva, Río Puerto Viejo, 10.440°N, 84.012°W, el 30 m, 19.vi.1986, Holzenthal,

Heyn, Armitage (INBIO); Puntarenas: 1 ♂, Río Jaba at rock quarry, 1.4 km (air) W Las Cruces, 8.79°N, 82.97°W, el 1150 m, 15.iii.1991, Holzenthal, Muñoz, Huisman (UMSP).

Etymology: From the Greek *para*, for beside, and meaning near Ortiziana, because of the similarity of this species to *Chimarra ortiziana* Flint.

**Chimarra peineta Blahnik and Holzenthal,
NEW SPECIES**

Fig. 12A–F

This is another member of the Ortiziana Group of species. It can be distinguished by a combination of characters, each of which is very similar to other species in the Ortiziana Group. The inferior appendages are very similar to those of *Chimarra villalobosi* Bueno and *C. pollex* n. sp. They differ from the former in that the dorsal thumblike processes are slightly more strongly flexed and more enlarged and rounded apically, and from the latter by being less globose in contour and with the thumblike processes slightly longer (although very similarly flexed). *Chimarra peineta* is easily separated from these two species, however, in the structure of the tenth tergum. The lateral lobe of tergum X of *C. villalobosi*, which is not figured in the description of that species, is elongate, with a gradually emergent, rounded, sensilla-bearing lateral projection, and a much narrowed apex that is usually abruptly outwardly flexed near its terminus. The clustered phallic spines in *C. villalobosi* are also distinctly less elongate than in *C. peineta*. The structure of tergum X of *C. peineta* is, however, very similar to *C. paraortiziana* n. sp., and the linear array of spines in the phallus much resembles that of *C. platyrhina* Flint and *C. dolabrifera* Flint. All of these latter species, however, have inferior appendages with less flexed thumblike processes. In addition, *C. paraortiziana* has shorter phallic spines than those found in *C. peineta*. Although the characters sepa-

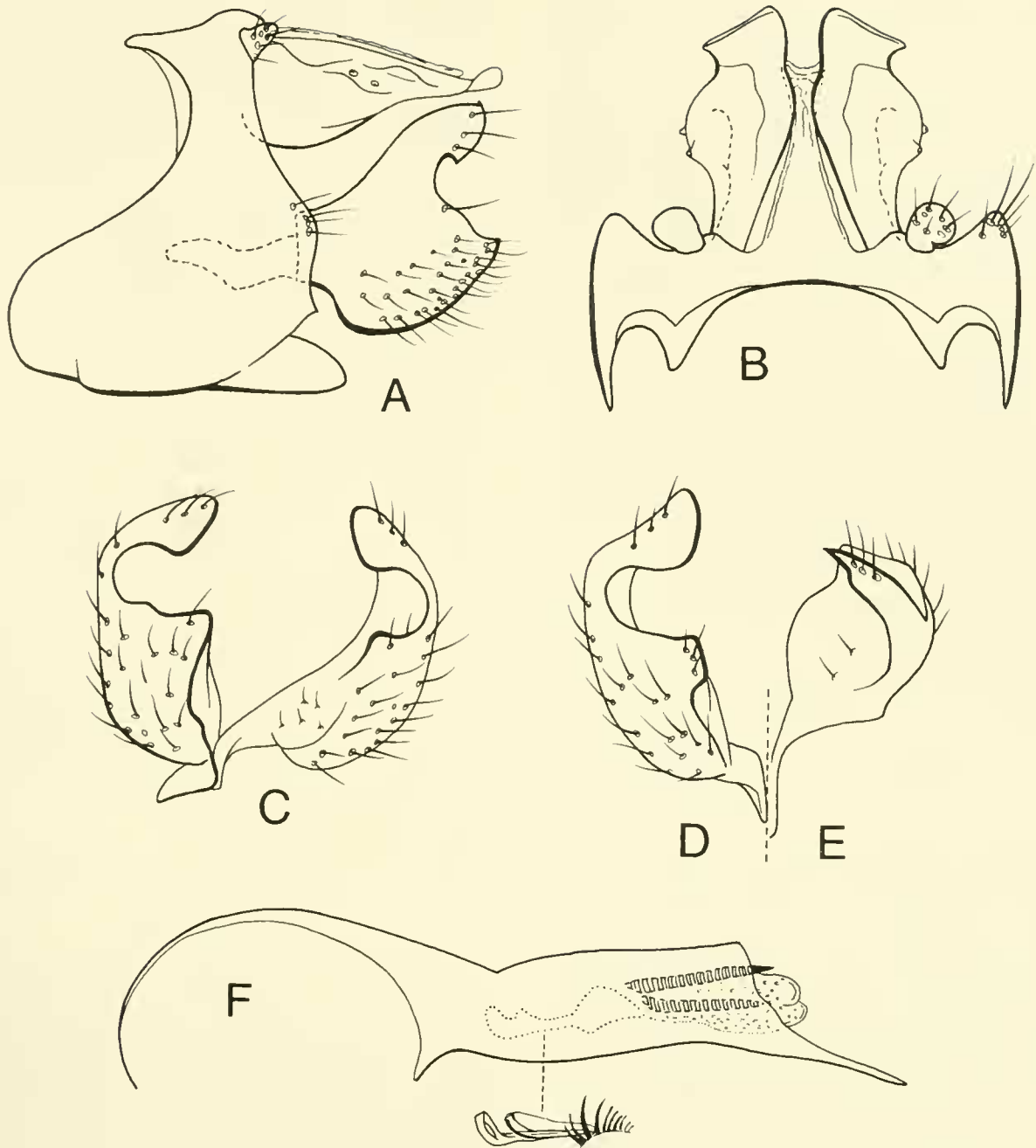


Fig. 12. A–F. *Chimarra peineta* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: phallosclerite complex and phallic spines).

rating the various species may seem of doubtful significance, all of the Costa Rican species have been found in various combinations of sympatric populations, easily separable to species and without intergrading variation.

Male: Forewing length 3.6–4.8 mm. Color rather uniformly fuscous, except head somewhat darker and femora yellowish-brown. Genitalia: Abdominal segment IX, in lateral view, with pronounced sinuous

extension of anteroventral margin and with apodemelike projections from the anterodorsal margin; posteroventral process moderately elongate, narrowed apically. Tergum X membranous mesally, with two heavily sclerotized lateral lobes, each bearing broadly rounded expansion midlaterally, with two sensilla raised on small nipplelike projections; terminus of lateral lobe flattened and acutely angled at outer edge. Inferior appendage, in lateral view, with

subquadrate base and flattened, thumblike, dorsal extension, flexed caudally (when viewed laterally) and proximally (when viewed caudally); thumblike projection apically rounded and forming distinct notch produced by its flexion with respect to base, much as in *C. pollex* n. sp., but flexion point more angular and length of thumblike process longer than that species. Phallus with pronounced apicoventral extension of phallobase; endothecal spines two, subequal, relatively short; tip of phallus (apparently) with minute, echinate spines and sclerous region possessing bilinear array of radiating, curved spines, graduated in length; paired spines of bilinear array often closely apposed in unexpanded phallus and appearing as single array. Phallosomal sclerite complex composed of elongate rod and ring structure, and apical membranous structure with associated pair of wishbonelike sclerites.

Holotype: ♂, Costa Rica: Guanacaste: Parque Nacional Guanacaste, El Hacha, Quebrada Alcornoque, 11.009°N, 85.577°W, el 250 m, 26.vii.1987, Holzenthal, Morse, Clausen (NMNH). *Paratypes*: Costa Rica: Alajuela: 3 ♂, 1 ♀ (in alcohol), Río Pizote, ca. 5 km N Dos Ríos, 10.948°N, 85.291°W, el 470 m, 09.iii.1986, Holzenthal & Fauth (UMSP); 42 ♂ (in alcohol), Río Pizote, ca. 5 km (air) S Brasilia, 10.972°N, 85.345°W, el 390 m, 12.iii.1986, Holzenthal & Fauth (UMSP); Guanacaste: 1 ♂, P. N. (Parque Nacional) Guanacaste, El Hacha, Quebrada Pedregal, 10.983°N, 85.539°W, el 300 m, 27.vii.1987, Holzenthal, Morse, Clausen (UMSP); 8 ♂ (pinned), 2 ♂ (in alcohol), same data as holotype (UMSP); 1 ♂, P. N. Guanacaste, Estación Pitilla, Río Orosí, 10.991°N, 85.428°W, el 700 m, 22–25.v.1990, Holzenthal & Blahnik (UMSP); Heredia: 4 ♂, Río Bijagual on road to Magsasay, 10.408°N, 84.076°W, el 140 m, 12.ii.1986, Holzenthal, Morse, Fauth (INBIO); 9 ♂ (in alcohol), Estación Biológica La Selva, Río Puerto Viejo, 10.440°N, 84.012°W, el 30 m, 19.vi.1986, Holzenthal, Heyn, Armitage

(UMSP); Limón: 1 ♂ (in alcohol), La Lola, nr Matina, 11.iii.1965, S. & W. D. Duckworth (NMNH); Puntarenas: 1 ♂, Reserva Biológica Carara, Quebrada Bonita, 9.775°N, 84.605°W, el 35 m, 11.iii.1991, Holzenthal, Muñoz, Huisman (UMSP); San José: 3 ♂ (in alcohol), P. N. Braulio Carrillo, Estación Carrillo, Quebrada Sanguijuela, 10.160°N, 83.963°W, el 800 m, 27.iii.1987, Holzenthal, Hamilton, Heyn (UMSP); 4 ♂, 4 ♀ 16 mi S San Isidro, 02.vii.1967, Flint & Ortiz (NMNH); Panama: San Blas: 1 ♂, Quebrada Pingadi, 9 km N Nusagandi, 01–02.iii.1985, Flint & Louton (NMNH); Canal Zone: Barro Colorado Island: 1 ♂, 1 ♀, vii.1967, W. W. Wirth (NMNH); 1 ♂ (in alcohol), Poacher's Peninsula, 06–10.iv.1987, H. Wolda (NMNH); 1 ♂ (in alcohol), 27–31.iv.1986, H. Wolda (NMNH); 3 ♂, 12.iii.1967, M. E. Irwin (UCR).

Etymology: Peineta, the Spanish word for a woman's comb, in reference to the array of spines of the phallus.

***Chimarra pollex* Blahnik and Holzenthal,
NEW SPECIES
Fig. 13A–F**

This species is also a member of the Ortiziana Group of species. It is very similar to *C. solisi* n. sp., but differs in the shape of the inferior appendages, which, in this species, are more globose—the dorsal thumblike processes being very short and tightly curled. In the latter character it much resembles *C. peineta* n. sp., but differs from that species by having the lateral lobes of tergum X less sclerotized and with the lateral sensilla on distinct, well-developed, nipplelike projections, and also by lacking a linear cluster of spines in the phallus.

Male: Forewing length 4.2–5.5 mm. Color rather uniformly fuscous black, except femora yellowish to yellowish-brown. Genitalia: Abdominal segment IX, in lateral view, with distinct sinuous extension of anteroventral margin and with small apodemes from the anterodorsal margin; posteroventral process moderately elongate and

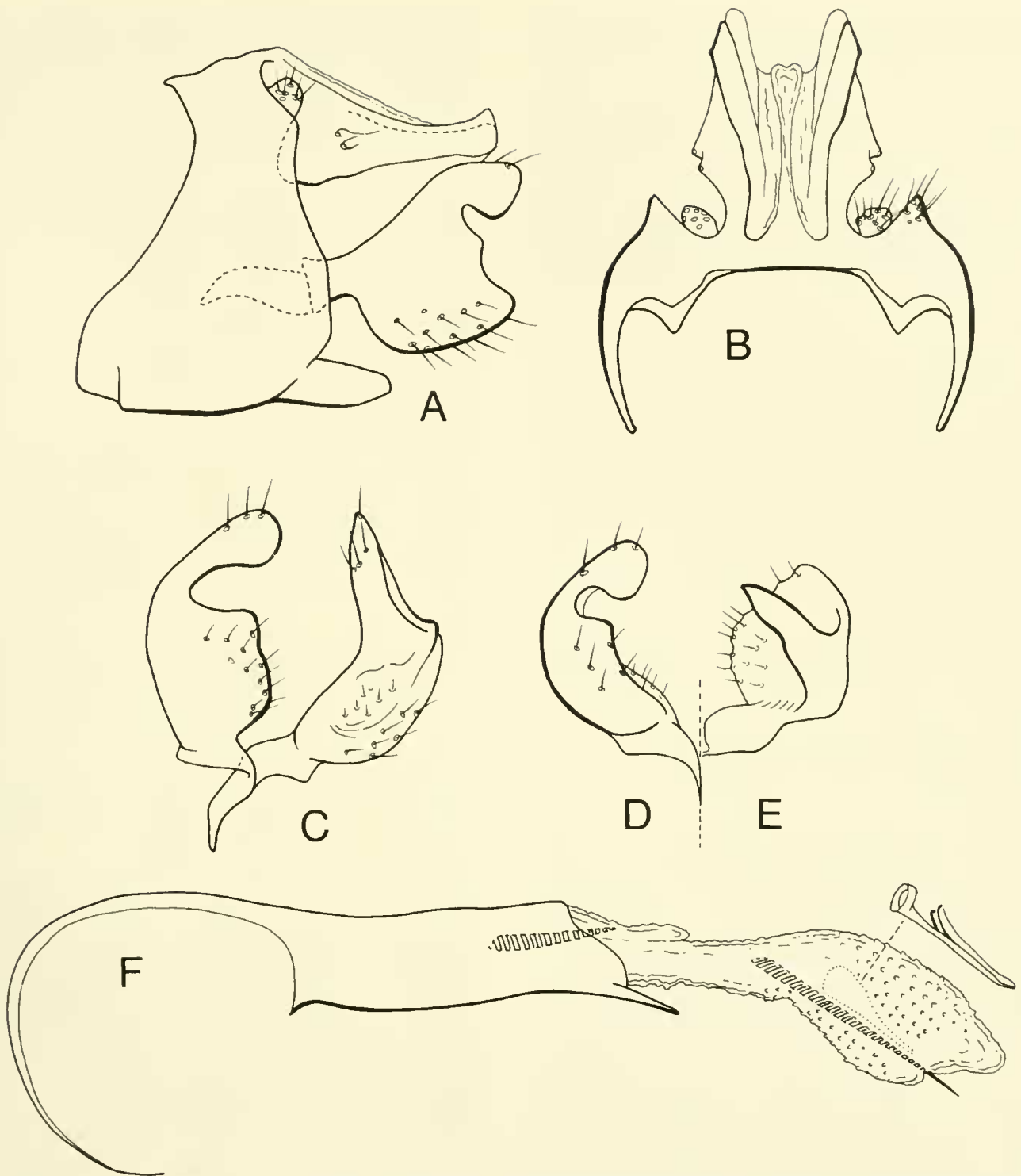


Fig. 13. A-F. *Chimarra pollex* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: phallotremal sclerite complex).

apically rounded. Tergum X membranous mesally, with pair of sclerotized lateral lobes, each with pair of pronounced nipplelike, sensillum-bearing, projections midlaterally; terminus of lateral lobe flattened and forming slight dorsal protuberance by extension of outer margin. Inferior appendage, in lateral view, with subquadrate (but somewhat rounded) base and a short, flattened,

thumblike dorsal extension; thumblike extension very strongly curled or flexed, both caudally (when viewed laterally) and proximally (when viewed caudally), forming distinct notch produced by its flexion with respect to base. Phallus with distinct apicoventral extension of phallobase; endothecal spines two, one short and emergent from base of endotheca, posterior one

somewhat longer and emergent from middle of endotheca; tip of phallus, when expanded, globose and bearing numerous minute, echinate spines, these appearing as granular area within phallobase of unexpanded phallus; phallotremal sclerite complex composed of elongate rod and ring structure and apical membranous structure with associated pair of wishbonelike sclerites.

Holotype: ♂, Costa Rica: Alajuela: Reserva Forestal San Ramón, Río San Lorencito & tribs., 10.216°N, 84.607°W, el 980 m, 01–04.v.1990, Holzenthal & Blahnik (NMNH).
Paratypes: Costa Rica: Alajuela: 2 ♂ (pinned), 35 ♂ (in alcohol), P. N. (Parque Nacional) Rincón de la Vieja, Quebrada Provisión, el 810 m, 04.iii.1986, Holzenthal & Fasth (UMSP); 5 ♂ (pinned), 7 ♂ (in alcohol), Cerro Campana, Río Bochinche trib., 6 km (air) NW Dos Ríos, el 600 m, 22–23.vii.1987, Holzenthal, Morse, Clausen (UMSP); 1 ♂, Reserva Forestal San Ramón, Río San Lorencito & tribs., 10.216°N, 84.607°W, el 980 m, 24–27.ii.1987, I. & A. Chacón (UMSP); 5 ♂, 1 ♀ (pinned), 242 ♂ (in alcohol), same location, 30.iii.–01.iv.1987, Holzenthal, Hamilton, Heyn (UMSP); 4 ♂, same location, 02–04.vii.1986, Holzenthal, Heyn, Armitage (UMSP); 18 ♂, 6 ♀ (pinned), 39 ♂, 42 ♀ (in alcohol), same location, 13–16.vi.1988, C. M. & O. S. Flint, Holzenthal (NMNH); 2 ♂, same location, 28–30.vii.1990, Holzenthal, Blahnik, Muñoz (UMSP); 11 ♂, same location, 06–10.iii.1991, Holzenthal, Muñoz, Huisman (INBIO); Cartago: 2 ♂, Quebrada Platanillo, ca. 5 km E Moravia de Chiripó, 9.821°N, 83.407°W, el 1130 m, 06.viii.1987, Holzenthal, Morse, Clausen (UMSP); 12 ♂ (in alcohol), same location, 07.viii.1987, Holzenthal, Morse, Clausen (UMSP); 2 ♂, Quebrada Latas, 8.9 km NE Bajos del Toro, 10.269°N, 84.260°W, el 1030 m, 06.ix.1990, Holzenthal, Blahnik, Huisman (UMSP); 5 ♂, Río Agrio, ca. 3.5 km NE Bajos del Toro, 10.243°N, 84.279°W, el 1290 m, 20.viii.1990, Holzenthal et al. (UMSP); 1 ♂, Río Chitaria, route 10, 10 km

NW Río Reventazón, 9.920°N, 83.604°W, el 740 m, 21.iii.1991, Holzenthal, Muñoz, Huisman (UMSP); Guanacaste: 3 ♂ (pinned), 121 ♂ (in alcohol), Quebrada Garcia, 10.6 km ENE Quebrada Grande, 10.862°N, 85.428°W, el 470 m, 08.iii.1986, Holzenthal & Fasth (UMSP); 1 ♂, P. N. Rincón de la Vieja, Río Negro, 10.765°N, 85.313°W, 810 m, 03.iii.1986, Holzenthal & Fasth (UMSP); 3 ♂, 1 ♀ (pinned), 18 ♂ (in alcohol), Río Góngora (sulfur mine), 4 km (air) NE Quebrada Grande, 10.887°N, 85.470°W, el 590 m, 21.vii.1987, Holzenthal, Morse, Clausen (UMSP); 3 ♂ (pinned), 20 ♂ (in alcohol), P. N. Guanacaste, El Hacha, Quebrada Alcornoque, 11.009°N, 85.577°W, el 250 m, 26.vii.1987, Holzenthal, Morse, Clausen (UMSP); 1 ♂ (pinned), 3 ♂ (in alcohol), P. N. Guanacaste, Maritza, Río Tempisquito, 10.958°N, 85.497°W, el 550 m, 19–20.vii.1987, Holzenthal, Morse, Clausen (UMSP); 5 ♂, same location, 30–31.viii.1990, Huisman, Blahnik, Quesada (INBIO); 2 ♂ (pinned), 13 ♂, 23 ♀ (in alcohol), same location, 17–18.vi.1988, C. M. & O. S. Flint, Holzenthal (NMNH); 18 ♂, P. N. Guanacaste, ca. 0.7 km N Estación Maritza, 10.96°N, 85.50°W, el 550 m, 31.viii.1990, Huisman & Quesada (UMSP); 8 ♂ (in alcohol), Río Los Ahogados, 11.3 km ENE Quebrada Grande, 10.865°N, 85.423°W, el 470 m, 07.iii.1986, Holzenthal & Fasth (UMSP); 11 ♂, 15 ♀ (pinned), 7 ♂, 8 ♀ (in alcohol), P. N. Guanacaste, Estación Pitilla, Río Orosí, 10.991°N, 85.428°W, el 700 m, 19–20.vi.1988, C. M. & O. S. Flint, Holzenthal (NMNH); 33 ♂, same location, 22–25.v.1990, Holzenthal & Blahnik (UMSP); Heredia: 2 ♂ (in alcohol), Rara Avis Biol. Station, Quebrada Chiquiza, 10.229°N, 84.032°W, el 550 m, 31.iii.1989, Blahnik & Solís (UMSP); 1 ♂, P. N. Braulio Carrillo, Estación El Ceibo, Río Peje, 10.327°N, 84.078°W, el 480 m, 29–31.v.1990, Holzenthal, Blahnik, Muñoz (UMSP); Limón: 2 ♂, P. N. Braulio Carrillo, Quebrada Gonzalez, 10.160°N, 83.939°W, el 480 m, 12–14.v.1990, Holzenthal & Blahnik (UMSP);

Puntarenas: 2 ♂ (in alcohol), Río Singrú, ca. 2 km (air) S Finca Helechales, 9.057°N, 83.082°W, el 720 m, 21.ii.1986, Holzenthal, Morse, Fasth (UMSP); 5 ♂, Río Jaba at rock quarry, 1.4 km (air) W Las Cruces, 8.79°N, 82.97°W, el 1150 m, 09.viii.1990, Holzenthal, Blahnik, Muñoz (UMSP); San José: 5 ♂ (pinned), 2 ♂ (in alcohol), P. N. Braulio Carrillo, Estación Carrillo, Quebrada Sanguijeula, 10.160°N, 83.963°W, el 800 m, 27.iii.1987, Holzenthal, Hamilton, Heyn (UMSP); 2 ♂, 12 ♀, same location, 11–12.vi.1988, C. M. & O. S. Flint, A. Chacón (NMNH). Panama: Canal Zone: 6 ♂, Barro Colorado Island, 12.iii.1967, M. E. Irwin (UCR); San Blas: 1 ♂, 2 ♀, Nusagandi, 9°20'N, 78°56'W, el 350 m, 01–06.iii.1985, Flint & Louton (NMNH).

Etymology: Pollex, from the Latin for thumb, in reference to the distinctive thumblike extensions from the inferior appendage of this species.

**Chimarra solisi Blahnik and Holzenthal,
NEW SPECIES**

Fig. 14A–F

This species is another member of the Ortiziana Group of species. It is practically identical to *C. pollex* n. sp. in the structure of the tenth tergum, but differs from that species in the structure of the inferior appendages, which, in this species, have longer, narrower, and less tightly curled, thumblike projections.

Male: Forewing length 4.5–4.8 mm. Color (in alcohol) brownish. Genitalia: Abdominal segment IX, in lateral view, with distinct sinuous extension of anteroventral margin and with small apodemes from the anterodorsal margin; posteroventral process moderately elongate, narrowed apically. Tergum X membranous mesally, with pair of sclerotized lateral lobes, each with pair of pronounced, nipplelike, sensillum-bearing, projections midlaterally; terminus flattened, the outer edge slightly protuberant, much as in *C. pollex* n. sp., but slightly more pronounced. Inferior appendage, in

lateral view, with base distinctly quadrate, dorsally with narrowed thumblike appendage, strongly curved caudally (when viewed laterally) and more distinctly curved proximally (when viewed caudally). Phallus with distinct apicoventral extension of phallobase; endothecal spines two, subequal in length, moderately elongate; tip of phallus (apparently) with minute echinate spines, phallotremal sclerite complex composed of a rod and ring structure, and membranous apical structure with associated pair of wishbonelike sclerites.

Holotype: ♂, Costa Rica: Heredia: Rara Avis Biol. Station, Quebrada Chiquiza, 10.229°N, 84.032°W, el 550 m, 31.iii.1989, Blahnik & Solís (NMNH). *Paratypes:* Costa Rica: Heredia: 1 ♂ (in alcohol), same data as holotype (UMSP); 1 ♂ (in alcohol), same data as holotype (INBIO).

Etymology: Named for Angel Solís Blanco, who collected this new species at a site where the first author only managed to fall and break his hand.

Chimarra virgencita

Blahnik and Holzenthal, NEW SPECIES

Fig. 15A–F

This is a unique species with no obvious close relationship to other described species of *Chimarra*. Several characters suggest a distant relationship to *C. amica* n. sp., *C. longiterga* n. sp., and their relatives, but this has not been ascertained. A possible affinity to *C. longiterga* is also suggested by the fact that both collection sites for this species were in the vicinity of small trickling waterfalls. It is easily recognized by the shape of the inferior appendages and the structure of the lateral lobes of the tenth tergum.

Male: Forewing length 5.3–5.6 mm (females 6.1–6.8 mm). Color nearly uniformly fuscous black, except femora yellowish. Genitalia: Abdominal segment IX with well-developed anterodorsal apodemes and a pronounced, sinuous extension of the anteroventral margin; posteroventral process short, narrow, subacute. Tergum X mem-

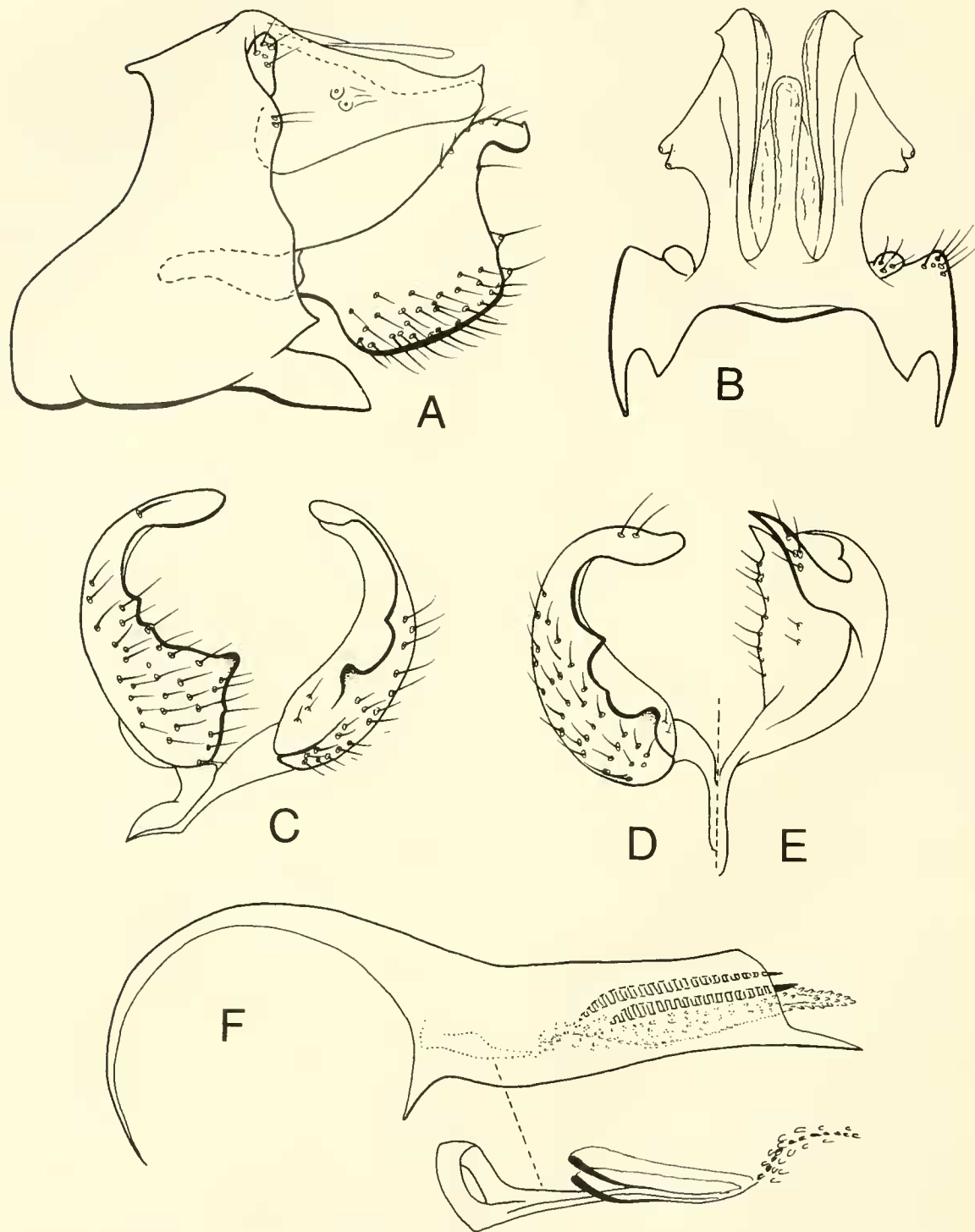


Fig. 14. A-F. *Chimarra solisi* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: enlargement of phallotremal sclerite complex).

branous mesally, with two sclerotized lateral lobes; apex of lateral lobes distinctly spoon-shaped on proximal surface; each lobe with two sensilla located basolaterally. Pre-anal appendages small, short, rounded. Inferior appendage rather ovate, apically with subequal dorsal and ventral lobes, separated by sinuous excavation; basodorsally with distinct setose protuberance on proximal

surface. Phallus with slight apicoventral extension of phallobase; endothelial spines two, short, subequal; apex of phallus (apparently) with minute echinate spines; phallotremal sclerite complex composed of rod and ring structure and membranous apical structure.

Holotype: ♂, Costa Rica: Alajuela: Quebrada Virgencita, 10.2 km S Bajos del Toro,

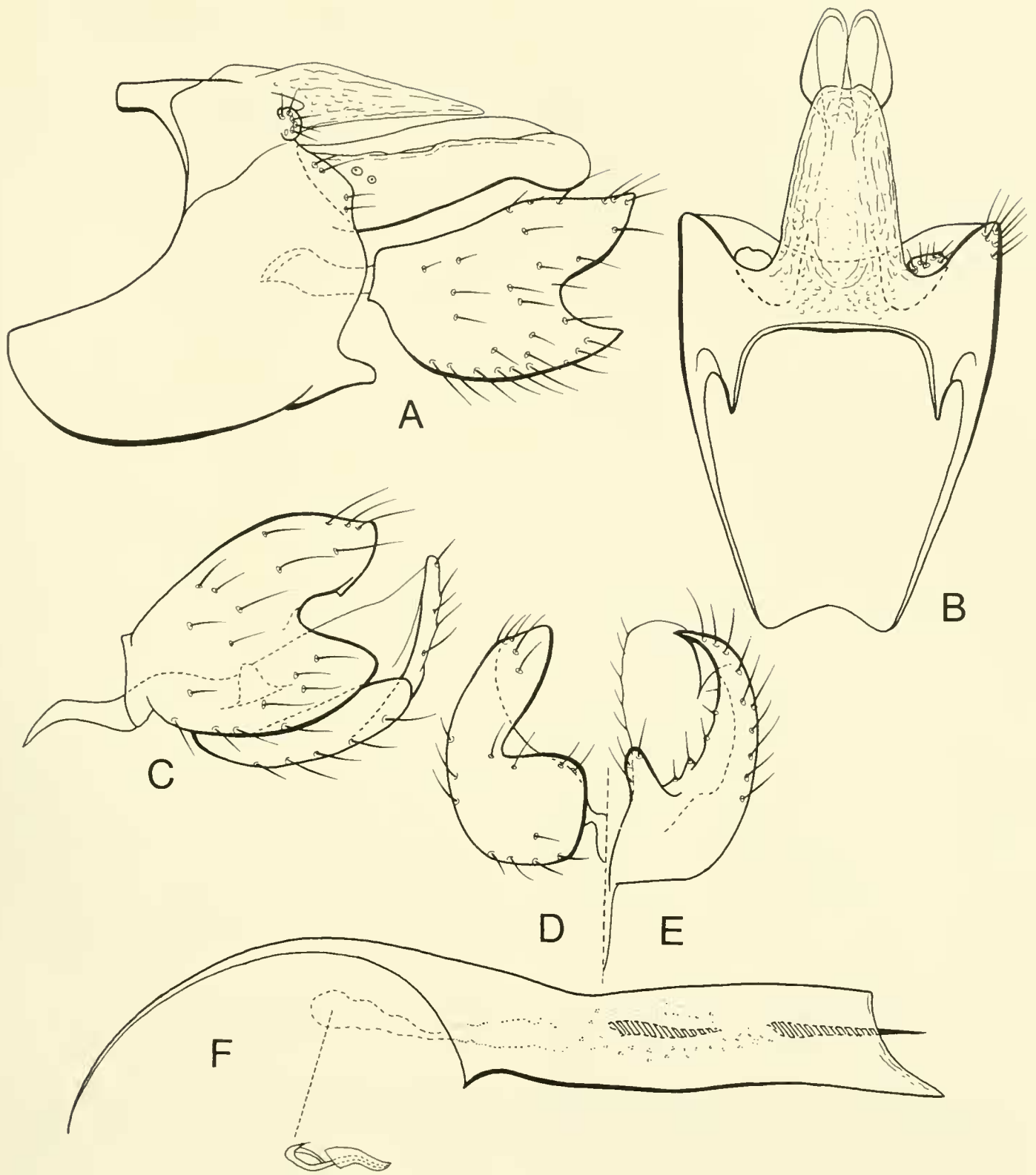


Fig. 15. A-F. *Chimarra virgencita* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: phallotremal sclerite complex).

10.168°N, 84.326°W, el 1780 m, 05-06.ix.1990, Holzenthal, Blahnik, Huisman (NMNH). *Paratypes*: Costa Rica: Alajuela: 5 ♀, same data as holotype (NMNH); Cartago: 3 ♂, 2 ♀, Reserva Tapantí, Río Dos Amigos & falls, ca. 6 km (rd) NW tunnel,

9.704°N, 83.783°W, el 1500 m, 04-05.viii.1990, Holzenthal, Blahnik, Muñoz (UMSP); 1 ♂, same location, 23.iii.1991, Holzenthal, Muñoz, Huisman (UMSP); 2 ♂, Reserva Tapantí, Quebrada Palmitos & falls, 9.72°N, 83.78°W, el 1400 m, 02-03.vi.1990,

Holzenthal, Blahnik, Muñoz (INBIO); 1 ♂, 1 ♀, same location, 24–25.iii.1991, Holzenthal, Muñoz, Huisman (UMSP).

Etymology: Virgencita (little virgin), named for the type locality in Costa Rica, Quebrada Virgencita, itself marked by a small shrine of the Blessed Virgin placed overlooking a small waterfall and pool.

Chimarra yanura Blahnik and Holzenthal,
NEW SPECIES
Fig. 16A–F

This species is a member of the Beameri Group of *Chimarra*, and may, in fact, be a geographical variant of *C. beameri* Denning. However, *C. beameri* has rather constant morphology in its distribution from Texas to southern Mexico, and *C. yanura* differs in several respects from this form. In *Chimarra beameri* the apical prominence of the lateral lobe of the tenth tergum extends for about half the length of the lobe and has, at its apex, a distinct dorsal projection, sometimes giving the apex a cup-shaped appearance. In *C. yanura* the apical prominence is shorter and the apical projection, if present, is not prominent. Moreover, in *C. yanura* there is a distinct middorsal projection extending from the posterior edge of the ninth segment, which is absent in *C. beameri*. Also, the inferior appendage, as viewed caudally, is sinuously (less angularly) flexed in *C. yanura*, and possesses at its apex a preapical dorsal process, absent in *C. beameri*. These differences, while slight, have not been demonstrated to have interconnecting variability, and may well indicate species status for the two forms. In the course of the study of Costa Rican *Chimarra*, various pairs of similar species have often proven their distinctness by eventually being found co-existing in the same site, and without intergrading forms being found. It has proven prudent not to casually dismiss apparently minor variability. More complete collection records in the intervening area between southern Mexico and Costa Rica should help resolve the question of

the relationship of *C. beameri* and *C. yanura*.

Male: Forewing length 4.3–4.8 mm. Color rather uniformly fuscous, except femora yellowish. Genitalia: Abdominal segment IX with well-developed anterodorsal apodemes, anteroventral margin distinctly extended, joined linearly from dorsal apodemes to rounded ventrolateral margin; posteroventral process broad, subtriangular. Tergum X membranous mesally, with two sclerotized lateral lobes; lateral lobe with apical prominence formed by preapical, lateral spinelike protuberance; each apex of lateral lobe bearing pair of sensilla on slightly raised prominences, and with lateral crease. Tergum IX with middorsal, subtriangular projection. Preanal appendages small, short, somewhat flattened and knoblike. Inferior appendage, in lateral view, with rounded base and wide, tapering, dorsal projection, having truncate apex and preapical dorsal projection; in caudal view, inferior appendage with sinuous proximal curvature; proximal surface of appendage with setose ridge. Phallus with acute apicoventral extension of phallobase; phallobase somewhat convergent apically; endothecal spines two, slightly curved and unequal in length, one long, one of moderate length; apex of phallus (apparently) with minute echinate spines; phallostremal sclerite complex composed of rod and ring structure (rod short and curved and ring with prominent apicodorsal extension), and membranous apical structure with pair of fish-hooklike sclerites along anterior edge.

Holotype: ♂, Costa Rica: Limón: Parque Nacional Braulio Carrillo, Quebrada González, 10.160°N, 83.939°W, el 480 m, 12–14.v.1990, Holzenthal & Blahnik (NMNH). *Paratypes:* Costa Rica: Heredia: 3 ♂ (in alcohol), Estación Biológica La Selva, Río Puerto Viejo, 10.440°N, 84.012°W, el 30 m, 19.vi.1986, Holzenthal, Heyn, Armitage (UMSP); 2 ♂, 1 ♀ (in alcohol), La Selva Field Station nr. Puerto Viejo, 10°26'N, 83°59'W, 01–03.iv.1987, J. Hill (NMNH); Limón: 1

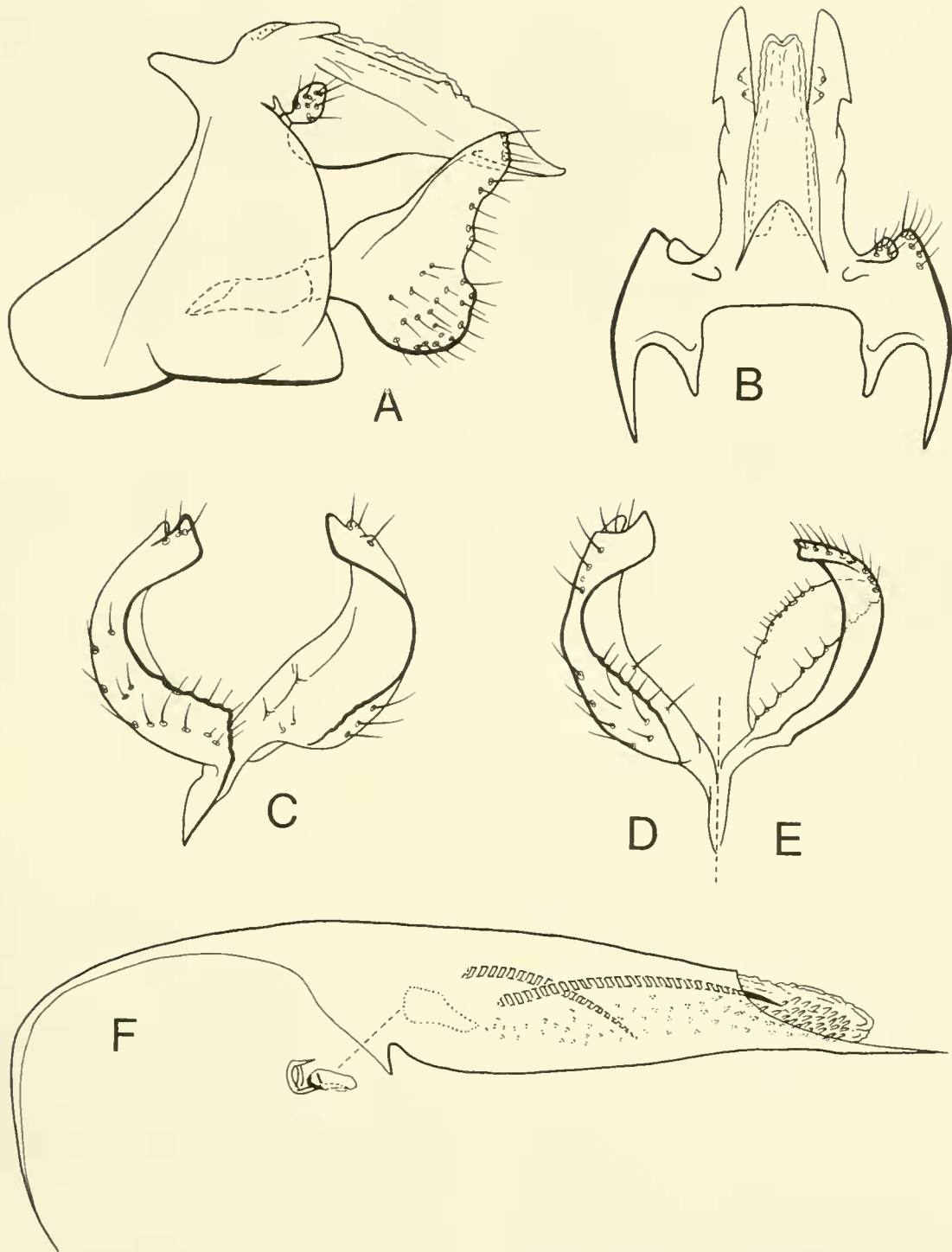


Fig. 16. A-F. *Chimarra yanura* new species, male genitalia: A, lateral; B, dorsal; C, inferior appendages, oblique lateral; D, inferior appendage, caudal; E, inferior appendage, dorsal; F, phallus (inset: phallosclerite complex).

♂ (in alcohol), Río Barbilla, ca. 8 km W B-Line, 10.067°N, 83.369°W, el 30 m, 31.i.1986, Holzenthal, Morse, Fash (UMSP); 1 ♂ (in alcohol), Río Telire and small trib., SE Suretka, 9.554°N, 82.892°W, el 48 m, 01.ii.1986, Holzenthal, Morse, Fash (INBIO).

Etymology: Yanura, from the Spanish word *llanura*, meaning lowland, and named

for the Atlantic lowland slopes of Costa Rica where this species has been collected.

NEW DISTRIBUTION RECORDS

Chimarra angustipennis Banks 1903

Costa Rica: Guanacaste: 2 ♂, P. N. Santa Rosa, Río Poza Salada, 10.799°N, 85.652°W, el 19 m, 24.vii.1987, Holzen-

thal, Morse, Clausen (UMSP); 1 ♂, P. N. (Parque Nacional) Guanacaste, Maritza, Río Tempisquito, 10.958°N, 85.497°W, el 550 m, 19–20.vii.1987, Holzenthal, Morse, Clausen (UMSP); 1 ♂, Río Tempisquito, Hda. Tempisquito (Pelón de la Altura), 10.847°N, 85.561°W, el 95 m, 18.vii.1987, Holzenthal, Morse, de la Rosa (UMSP); Puntarenas: 1 ♂, 1 ♀ (in alcohol), Río Rincón, 6.5 km (air) S Rincón, 8.638°N, 83.480°W, el 20 m, 07.iv.1987, Holzenthal, Hamilton, Heyn (UMSP); 2 ♂, 9 ♀ (pinned), 9 ♂, 20 ♀ (in alcohol), Río Seco, NW of Esparta, 23.vii.1967, O. S. Flint, Jr. (NMNH); 12 ♂ (in alcohol), 9 mi NW Esparta, 22.vii.1965, Paul J. Spangler (NMNH); 4 ♂ (in alcohol), Río La Vieja nr Lagarto, 02–03.vii.1967, Flint & Ortiz (NMNH).

Chimarra dentosa Ross 1948

Costa Rica: Guanacaste: 1 ♂, Parque Nacional Santa Rosa, Río Cuajiniquil, 10.881°N, 85.613°W, 25.vii.1987, Holzenthal, Morse, Clausen (UMSP); 2 ♂ (in alcohol), Río Tizate, 7.2 km NE Canas Dulces, 10.773°N, 85.449°W, el 275 m, 28.vi.1986, Holzenthal, Heyn, Armitage (UMSP).

ACKNOWLEDGMENTS

Special thanks are extended to Dr. Oliver S. Flint, Jr. for his help in determinations, for his assistance during a Short Term Visitor Grant to the Smithsonian Institution, and for his loan of material from the Smithsonian. We would also like to express thanks to Prof. Rodolfo Ortiz, Universidad de Cos-

ta Rica, San Ramón campus, and Mr. Ronald Valverde, Instituto Costarricense de Electricidad (ICE), for assistance and access to the Reserva Forestal San Ramón and the ICE facilities at the Tapantí Wildlife Reserve, Costa Rica, respectively. Also, we express our sincere appreciation to the personnel at the Museo Nacional de Costa Rica, INBio, and the Servicio de Parques Nacionales for their support of the caddisflies of Costa Rica project. Thanks also to Margot Monson for her critical comments on the manuscript. This material is based upon work supported by the National Science Foundation grants BSR-8512368 and BSR-8917684 and a Short Term Visitor Grant from the Smithsonian Institution to RJB. Paper No. 19,706 Scientific Journal Series, Minnesota Agricultural Experiment Station, St. Paul, Minnesota.

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